CHNOLOGY DEPARTMENT

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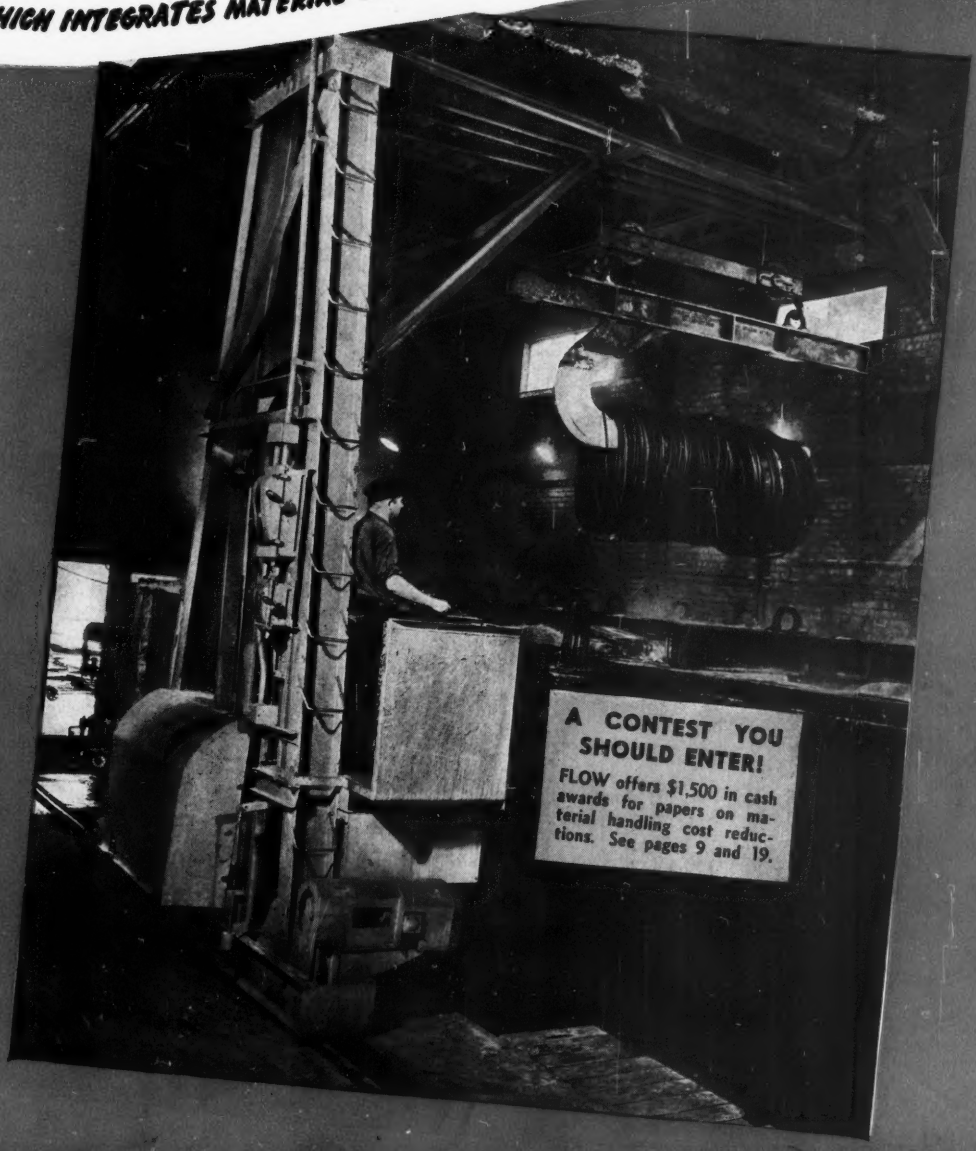
DETROIT

Flow

... THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION

MARCH
1947



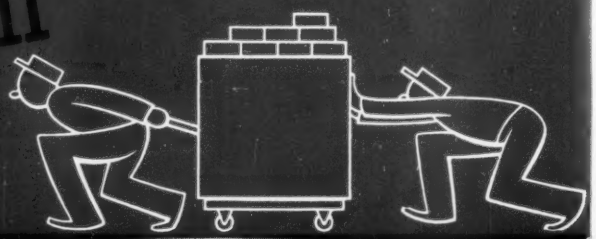
A CONTEST YOU SHOULD ENTER!

FLOW offers $1,500 in cash awards for papers on material handling cost reductions. See pages 9 and 19.

SEE PAGE 9 — ANNOUNCING THE FLOW CONTEST

Push and Pull

COST YOU PLENTY!



$775.00
F. O. B. Jackson

Get the Facts
Write for New
Model D Folder

The Trend is to

truck-man

FOR LOW-COST HAULING

YOU'RE THE MAN WE WANT TO SEE, if your plant *"can't afford"* motorized material handling. From small tool and die shops to sprawling factories, the trend is away from the snail's pace of the walking operator to the speed of gasoline power. Here are a few reasons owners are enthusiastic about Truck-Man:

- **It stands the gaff** 24 hours a day, with minimum down time. It's engineered for the job, built to highest standards...
- **Operator rides with the load,** reducing fatigue, trebling tonnage hauled. He's *proud* to operate a Truck-Man . . .
- **Handles 19 out of 20** skidded loads with ease. Lifts, starts and drops gently, protects floors and fragile material . . .
- **Amazingly easy to run** in high or low speed, turns in its own length. Ideal for narrow aisles, more productive floor space . . .
- **Simple, rugged construction** and VOLUME production mean first cost is low and replacements are all time-proven standard units . . .
- **Truck-Man means low investment,** low maintenance, low labor and fuel costs per ton of material moved . . .

Over 70 Truck-Man distributors in principal cities provide standard service.

1418 West Ganson, **truck-man** INC. Jackson, Mich.

TAKE IT FROM ME— *PAY LOADS... PAY OFF!

PROFITS LIKE THESE WHEN MATERIAL LOADS ARE MECHANIZED ELECTRICALLY

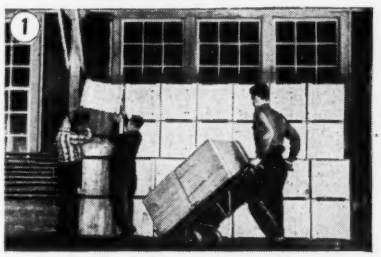
- √ Yearly handling costs cut $40,153.72
- √ 40% increased production
- √ 50% more free storage space
- √ Breakage costs reduced 80%

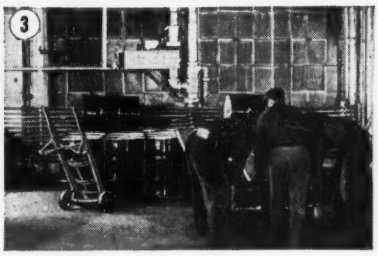
It used to take *four of our men* eight hours to unload a freight car of raw material MANUALLY. . . *32 man-hours* of back-breaking, gruelling labor. Now, with Automatic Transporter ONE MAN does the same job with ease in just *12 man-hours.*

Labor tugged and strained, moving and storing wood-cased material by hand...ate up *16 man-hours.* Now, ONE MAN operating an Automatic Transtacker, moves, lifts and stacks the same material ceiling high in *one man-hour*... gives us 50% more storage space free.

Yes, since I put these miracle trucks of mechanized power to work for us, production has increased 40%. Our yearly handling costs have been cut $40,153.72 ...dollars and cents proof that a material load MECHANIZED electrically is a PAY LOAD . . . and Automatic PAY LOADS PAY OFF in lightening labor's loads, management's, too!

Give *your* business this chance to make similar savings . . . *pay load profits!* Mail coupon.





1. OLD WAY: Bucket brigade storage system leads to injury of employees, damage to materials. Time for off-piling, hand-loading and unloading truck, and manual storage: 16 man-hours.

2. AUTOMATIC'S WAY: At the warehouse, TRANSTACKER, another new electric money-and-muscle saver, easily lifts, moves and stacks two tons of wood-cased material each trip.

3. OLD WAY: Back-breaking drudgery of man-handling oil drums wastes more productive labor and expensive space, requiring 90 man-hours to unload and store one carload by hand.

4. AUTOMATIC'S WAY: With the SKYLIFT Fork Truck, every trip becomes an easy four-in-one pay load, taking only 4 man-hours to unload freight car and stack drums to the rafters.

Be sure to see ATCO'S new film

*"PAY LOADS... PAY OFF"

Automatic
ELECTRIC TRUCKS
Lighten LIFE'S LOADS

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
141 West 87th Street, Dept.C-7, Chicago 20, Illinois

- ☐ Send information on Automatic Electric Trucks.
- ☐ Have an ATCO Specialist make a free survey of my materials handling costs.
- ☐ Schedule me for an early showing of ATCO's new movie, "Pay Loads Pay Off."

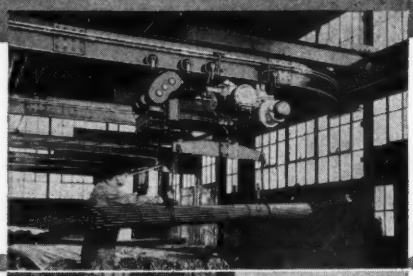
Company Name .....
By.....Position.....
Street Address.....
City.....State.....

MANUFACTURERS OF THE FAMOUS TRANSPORTER, TRANSTACKER AND SKYLIFT ELECTRIC TRUCKS

MONORAIL PAYS!!

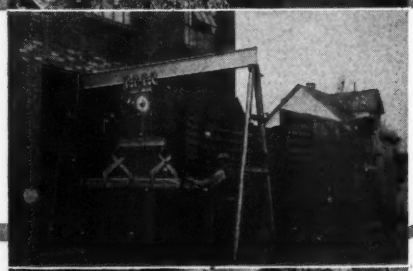
PRODUCTION INCREASE
From 26 to 48 tons per day.

By furnishing definite overhead routes for the movement of bar stock, congestion was eliminated. Free flow of materials to production machines nearly doubled their output.



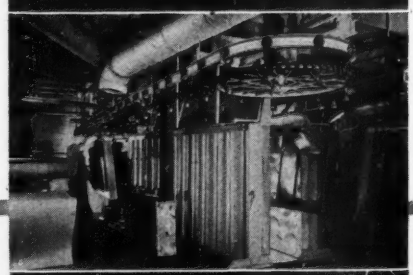
HANDLING COST
Saving of $150 in 4 months.

Transfer of sheet metal from truck to storage is costly when handled sheet by sheet. A simple system such as this actually saved $150 in handling cost within four months.



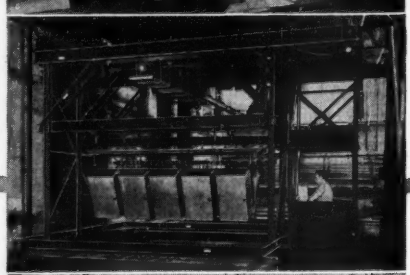
TIME SAVED
Drying time reduced 70%

Passage of metal furnace parts through infra-red dryers cuts 70% from the time formerly required for drying. This operation on monorail also eliminates costly handling labor.



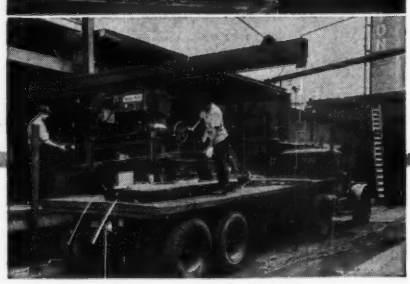
INCREASED CAPACITY
30% more units moved through process

Nearly a third more units can be handled from tank to tank throughout the cleaning process. All handling is controlled from cab by a single operator.



LABOR SAVED
Unloads truck with 26 less man hours.

Operators claim to save $20 per truck over former unloading costs. With power operated equipment and special grab for handling 2-ton loads, complete safety is assured.



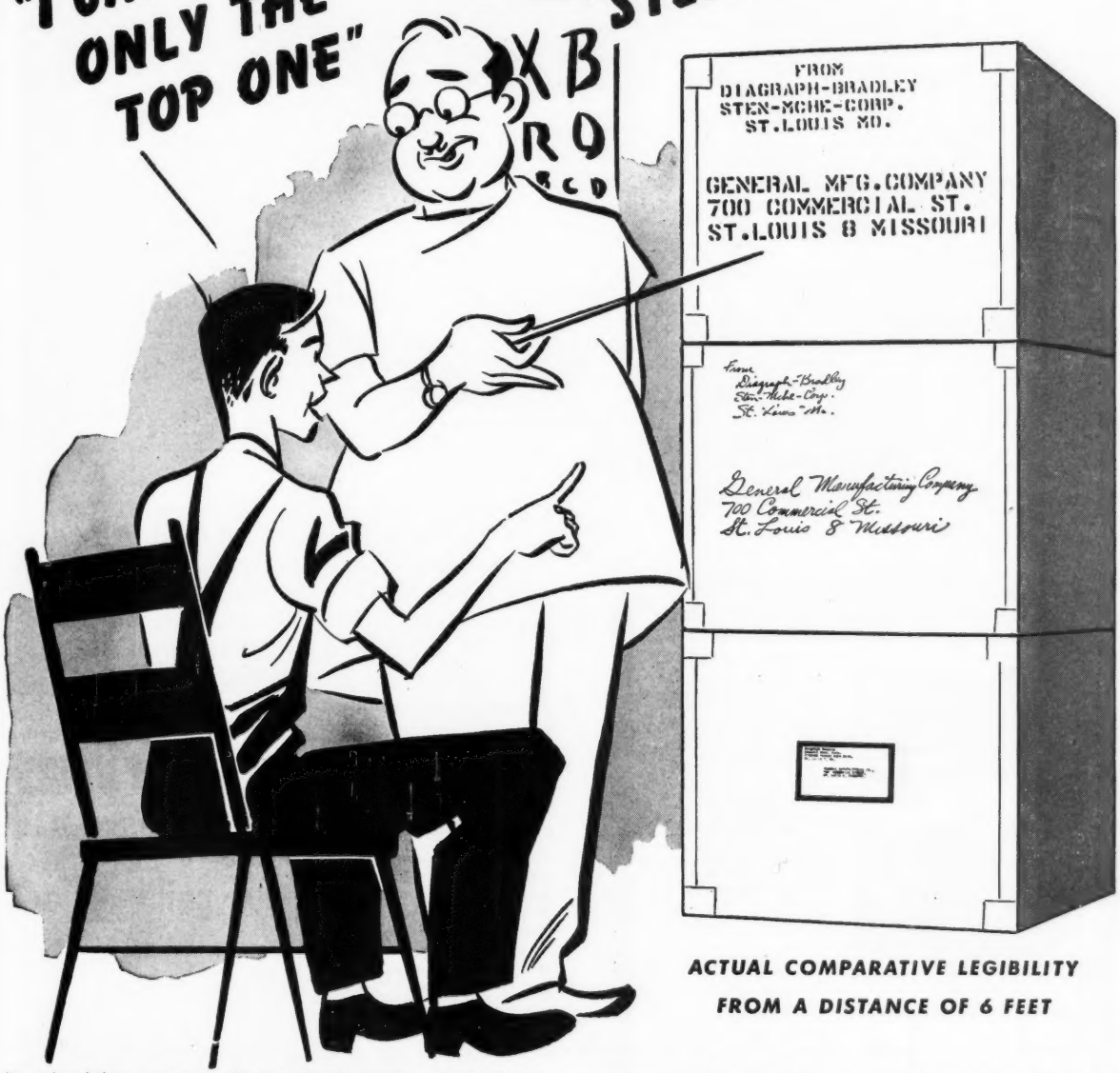
Let an American MonoRail Engineer explain how similar savings can be made in your handling methods. Write for Bulletin C-1 showing successful applications.

THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE CLEVELAND 7, OHIO

"I CAN READ ONLY THE TOP ONE"

"NATURALLY... IT'S STENCIL-MARKED!"



ACTUAL COMPARATIVE LEGIBILITY FROM A DISTANCE OF 6 FEET

Easy legibility...even in dimly lighted places such as freight cars and loading platforms . . . is just one of the big advantages of D.-B. Stencil-marked Addresses. D.-B. Stencil-marked Addresses are easier to read...are not obliterated by rain or damp weather...never slow down delivery or cause packages to end up in the "lost shipment warehouse". *No wonder common carriers actually recommend stencil-marking over labeling or hand-marking.* Investigate the greater speed, dependability, and long-range economy of D.-B. Stencil-marked Addresses. No obligation to have our factory-trained packaging and marking engineer analyze your procedure. Our telephone's listed under "Stencil Cutting Machines". Or write:

WORLD'S LARGEST MANUFACTURER OF STENCIL CUTTING MACHINES

D.B. REG. U.S. PAT OFF

DIAGRAPH-BRADLEY
STENCIL MACHINE CORPORATION
ST. LOUIS 8, MISSOURI

DISTRIBUTORS IN PRINCIPAL CITIES—SEE CLASSIFIED SECTION—TELEPHONE DIRECTORY—STENCIL CUTTING MACHINES

OVER 100 D-B ITEMS FOR THE SHIPPING ROOM

Tonnage Travels for Less...

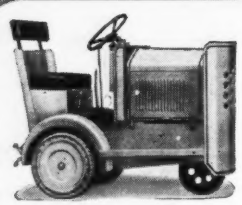
on THE MERCURY "TRACKLESS TRAIN"

Mercury "Tug" electric tractor provides fume-free motive power for train of Mercury "A-310" trailers.

Free of any fixed path—the versatile "Trackless Train" travels wherever material movement dictates—long hauls, short hauls or snaking through congested areas to deliver *more* tonnage at *lower* cost.

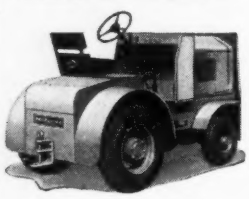
Every ton hauled for less because the "Trackless Train" keeps loads on wheels . . . easy to move, no "dead" weight. Moves more tonnage by merely adding more trailers . . . no increase in power units.

Learn how this versatile, low cost material handling system can serve you. For complete information, ask a Mercury Sales Engineer to call. There is no cost or obligation.



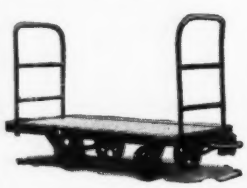
"BANTY" GAS TRACTOR

Smallest gas tractor made—yet develops a drawbar pull in excess of 2000 lbs. A favorite throughout industry for its power, stamina and compact size.



"HUSKIE" GAS TRACTOR

This rugged haulage unit is all that its name implies — a powerful, 6-cylinder, 4-wheel tractor—built to haul any wheeled load it might encounter in industry.



TYPE "A-310" TRAILER

Here's the "burden-bearer" of the "Trackless Train"—an all-steel, all-purpose, castor-steer trailer available in wide range of platform and body types. Easy-running, may be instantly coupled or detached.

FREE: BULLETIN 201-6

Illustrates and describes all Mercury equipment—including latest additions to Mercury's expanded material handling line. Request your copy of this 48 page catalog—today.

FORK-TRUCK —"TRACKLESS TRAIN"

When moving materials over 200 feet— do the job faster, at less cost by Fork-Truck- "Trackless Train." In this system, fork-truck loads trailers-tractor hauls trailers to destination-where fork truck speeds unloading.

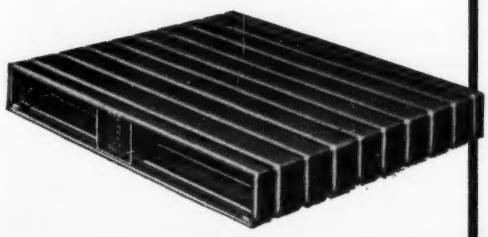
MERCURY MANUFACTURING CO.

4154 S. Halsted St.
Chicago 9, Ill.

MERCURY

TRACTORS • TRAILERS • LIFT TRUCKS

UNION METAL *Engineered* Pallets, Skids, Boxes, Cut Handling Costs



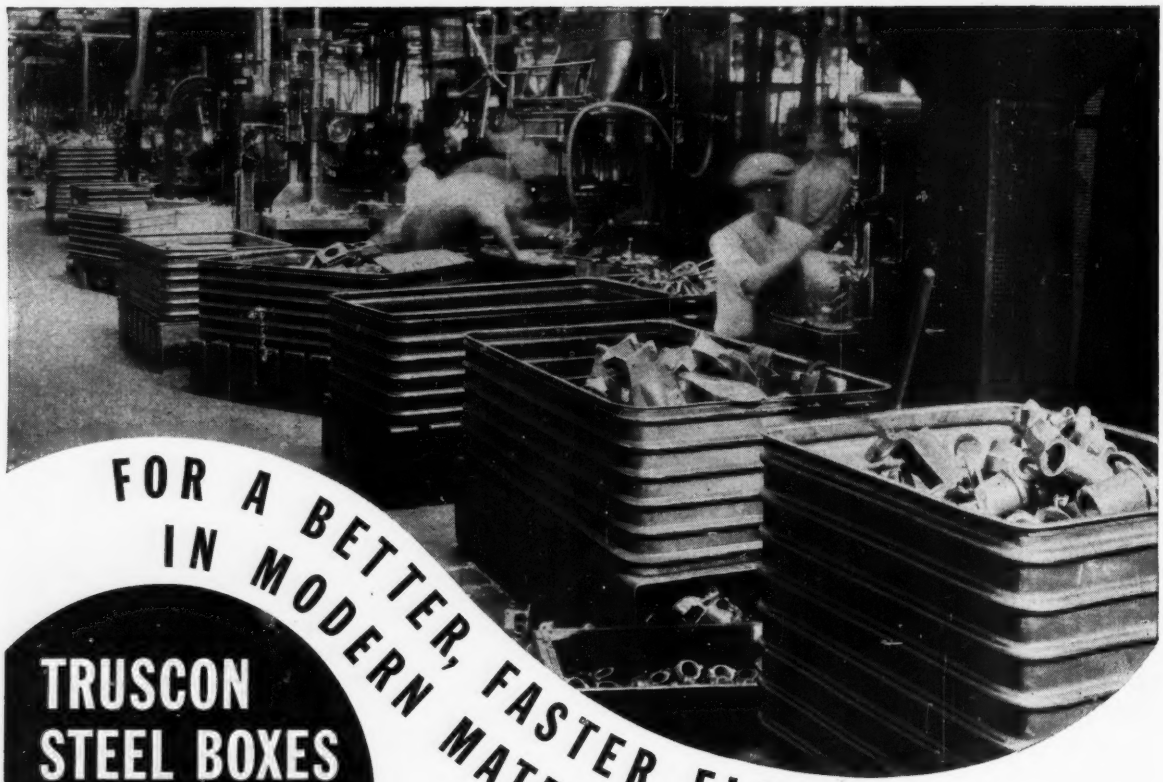
WHEN you have Union Metal materials handling equipment working for you, you can . . .

★ SAVE TIME
★ SPEED PRODUCTION
★ CUT COSTS

That's because these rugged, steel pallets, skids and boxes are designed to help you (1) make the most of every cubic foot of storage space . . . (2) keep floor space clear for stepped-up production schedules . . . (3) store or move raw materials or finished products in unit loads safely and economically.

For time-savings and cost-savings on your materials handling, put Union Metal equipment to work. Standard designs to meet most requirements; "Specials" available for your difficult problems. Write for complete information and helpful engineering service. The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL
Materials Handling Equipment



FOR A BETTER, FASTER FLOW IN MODERN MATERIALS HANDLING . . .

TRUSCON STEEL BOXES AND STEEL SKIDS

Keep materials, parts and finished products moving... keep them moving quickly, smoothly, efficiently... to storage rooms, loading platforms and other destinations ...with strong, easily-handled Truscon Steel Boxes and Skids. The slow piece-by-piece handling and moving of materials in any step of your manufacturing process, from raw materials to finished product, is costly throughout the day. Because of long experience in the materials handling field, Truscon has a wide range of steel boxes and steel skids that will exactly fit your needs. Write for the Truscon catalog of materials handling equipment, to help you plan a traffic system that will encourage greater output per man hour of labor. Truscon has field men who have helped solve many materials handling problems, and can be of helpful assistance to you. In the competitive period of industry that lies ahead, you will benefit in many ways from Truscon Steel Boxes and Steel Skids—look to Truscon to help you now.

Send for this FREE booklet.

TRUSCON STEEL COMPANY, Pressed Steel Division

6620 TRUSCON AVENUE ★ ★ ★ CLEVELAND 4, OHIO

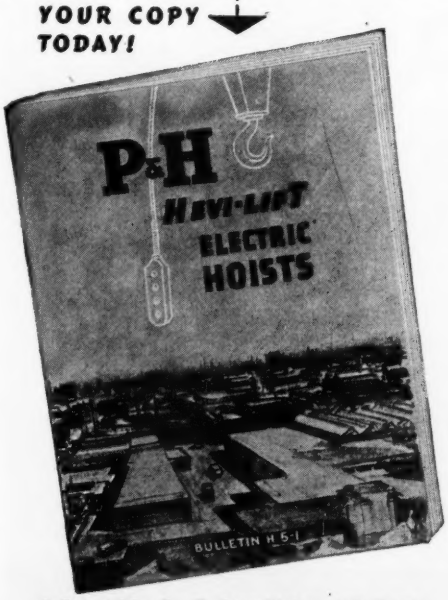
SUBSIDIARY OF REPUBLIC STEEL CORPORATION

P&H HEVI-LIFT
HARNISCHFEGER CORP. MILWAUKEE, WIS.

YOUR BIGGEST LOADS ARE ONE MAN JOBS

—when you move them "THRU-THE-AIR!"

SEND FOR YOUR COPY TODAY!



Bulletin H5-1 tells all about P&H Hevi-Lift Electric Hoists . . . where they're used . . . what kind of jobs they do. 50 pages of pictures and specifications. Get your free copy now!

Yes, *one man* does it all! Lifting . . . moving . . . "spotting" heavy loads exactly where they're wanted. And he does it all by pushing buttons!

Simple? Sure! So simple that more and more plants are finding "Thru-the-Air" handling the easiest way to cut costs — starting right NOW!

There's no waiting for results. Install a P&H Hevi-Lift Electric Hoist, and savings begin with the very first load!

Save these three ways:

(1) **SAVE TIME** . . . loads move direct, above congested aisles.

(2) **SAVE MANPOWER** . . . no wasted energies, no rehandling.

(3) **SAVE SPACE** . . . "Thru-the-Air" handling leaves floor space free.

Yes, all these savings apply to *your* plant. For details on capacities and installations, call in a P&H Hoist Engineer — no cost or obligation.

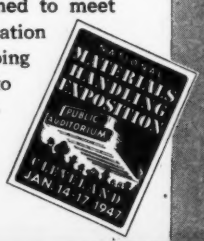
HARNISCHFEGER CORPORATION
HOISTS • WELDING ELECTRODES • MOTORS P&H EXCAVATORS • ELECTRIC CRANES • ARC WELDERS

4643 W. National Avenue Milwaukee 14, Wisconsin

With this light, easy-to-use, improved Stanley "Ace" Strapping Tool!

● Even beginners can do a fast, expert strapping job with the improved Stanley "Ace" Strapping Tool. Positive spring feed holds a 100-seal clip in magazine in any position. One lever tensions strapping, other cuts strapping, feeds and crimps seal all in one quick motion—all in only 5 seconds.

The 10 lb. 3 oz. improved "Ace" is available in 3 sizes for ⅜", ½" and ⅝" strapping to handle 'most any job—with special accessories designed to meet special needs. For full details or demonstration of what the improved Stanley "Ace" Strapping Tool can do in your shipping room, write to the Stanley Works, Steel Strapping Division, 203 Lake Street, New Britain, Conn.



Improved
Stanley "Ace" Strapping
Tool With Automatic Seal Feed

STANLEY

STEEL STRAPPING AND CAR BANDING SYSTEMS

Announcing the 1ST

Flow CONTEST

$1500.00 IN CASH PRIZES

For the Best Papers on Cost Reduction Through the Use of MATERIAL HANDLING EQUIPMENT

Awards . . . . **1st PRIZE $500.00**

2nd PRIZE $300.00 • 3rd PRIZE $200.00

4th • 5th • 6th • 7th and 8th Prizes $100.00 EACH

Management is becoming more and more material handling conscious—for it is in this field only that American Industry and Commerce can anticipate great savings, lower unit costs, more utilization of floor space, reduced shipping and warehousing expense. The cold actual facts are essential to management. To center interest in this broad subject FLOW Magazine announces its first "Cost Facts" contest. This contest opens March 15, closes December 15, 1947. Papers may be submitted describing any type of installation, old or new, big or small, in which the installation of material handling equipment can be demonstratively proven to have saved money. Papers submitted (they may be of any length) will be judged on (1) the exhaustive analysis of the cost factors entering into the installation or installations described, with details of the methods used in measuring cost savings, (2) the evaluation of the efficiency of the present methods over the past methods, and (3) the technical accuracy and completeness of the entry. Pictures, charts and layout drawings are necessary to the cost analysis presentation. This is to be an annual feature of FLOW Magazine. The first $1500 cash prize contest is open—get rules and entry blank—today.

RECEIVING

In your paper you may choose to describe your receiving room and yard practices in which there may have been significant percentages of savings when specialized mechanical handling equipment was used. A description of the cost reduction results with the necessary supporting evidence may win prize money.

PACKAGING MECHANICS

Many firms have saved huge amounts of money by proper packaging methods. These are, in the final analysis, material handling methods. Analyze the packaging handling. You may want to select this phase of your experience for your prize winning paper.

PROCESSING ASSEMBLY FABRICATION

Plant material handling improvements may have been made:—How and where has the use of equipment affected the cost of departmental overall operations, unit prices, or efficiency? Did a rearranged plant layout affect this? What are the facts? All the departmental cost facts of your "internal freight" mechanical handling can make a paper which will win you money.

WAREHOUSING OR STOCK KEEPING

You may have done a job of reorganization of space or scheduling which involved "putting it on wheels" and "up in the air." When you did, what and where did you save? Possibly your paper on this problem would be one of the big prize winners!

The $1500 award contest is open to everyone except a manufacturer or sales representative of what is generally known as material handling equipment. First prize is $500; second prize $300; third prize $200 and there are five prizes of $100 each. Writing ability is not important!—the completeness of your facts is.

Because of the confidential nature of many cost figures, we will not publish (when specifically requested) entrants' names or names of companies where cost studies originated. If actual figures cannot be used, the study may be expressed in percentages.

SEND FOR YOUR ENTRY BLANK

Now!

Write

CONTEST EDITOR

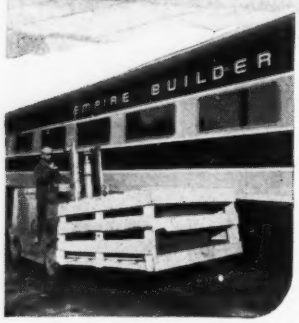
Flow **MAGAZINE**

1240 ONTARIO STREET

CLEVELAND 13, OHIO

20 BAKER TRUCKS mean 80% savings in handling costs at PULLMAN-STANDARD

Typical yard scene showing 3 Baker Platform Trucks hauling miscellaneous materials to cars. Truck at right doubles as tractor hauling trailer load of car partitions.



Baker Fork Truck carrying crated air conditioning unit, passing in front of nearly completed car for Great Northern's famous "Empire Builder" train.

Proper handling is extremely important at the Pullman-Standard Car Manufacturing Co.'s Chicago Plant. The various buildings are scattered over a wide area. A great variety of materials and fabricated parts are received on flat cars, in box cars or highway trucks. These must be unloaded, stored, and moved from storage to fabricating plants or to cars in the process of building. Where possible, materials are handled on skids or pallets, and transported by fork or lift trucks. Miscellaneous items are handled on platform trucks.

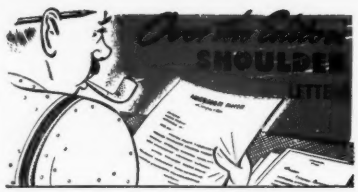
20 Baker Trucks, comprising fork trucks, low- and Hy-Lift trucks, platform trucks and crane trucks, form the basis for their modern, mechanized material handling system. Trucks are subjected to strenuous, continuous service indoors and out. According to the superintendent, they are giving highly satisfactory service—effecting an estimated saving of 80% in handling costs.

The Baker Material Handling Engineer can show you how similar savings may be made in your plant. Phone our nearest agent or write us direct.

Space in warehouse is conserved by tiering. Baker Fork Truck uses detachable fork extensions for handling crates 80 inches long.

BAKER INDUSTRIAL TRUCK DIVISION
of the BAKER-RAULANG COMPANY
2185 West 25th Street • Cleveland, Ohio
In Canada:
Railway & Power Engineering Corp., Ltd.

Baker INDUSTRIAL TRUCKS



To FLOW:
Now in Permanent Booth

Among the exhibits at the National Material Handling Exposition, held in Cleveland January 14 to 17, was a power "tail-gate" for a truck, which not only provided power lift from the ground, but also closed the back end of the truck bed. I believe that the exhibit was in Booth 217.

As I have misplaced the data on that piece of equipment, and cannot remember the manufacturer, it would be much appreciated if you would supply that information.—J. C. Jefferds, Jr., Charleston, West Virginia.

The manufacturer of this lift gate is the Anthony Company, Streator, Ill.—Ed.

To FLOW:
The $64 Question

We would appreciate your advising us the names of several companies who are skilled in material handling problems.

Our particular problem involves the storage, and handling from storage to point of use, about 300 tons of paper in roll form per day to bag machinery; and the handling of finished paper bags from the point of manufacture to storage, or to loading in boxcars or trucks.—Southern Kraft Division, International Paper Company, Mobile, Ala.

To FLOW:
Modern Handling Is Good Advertising

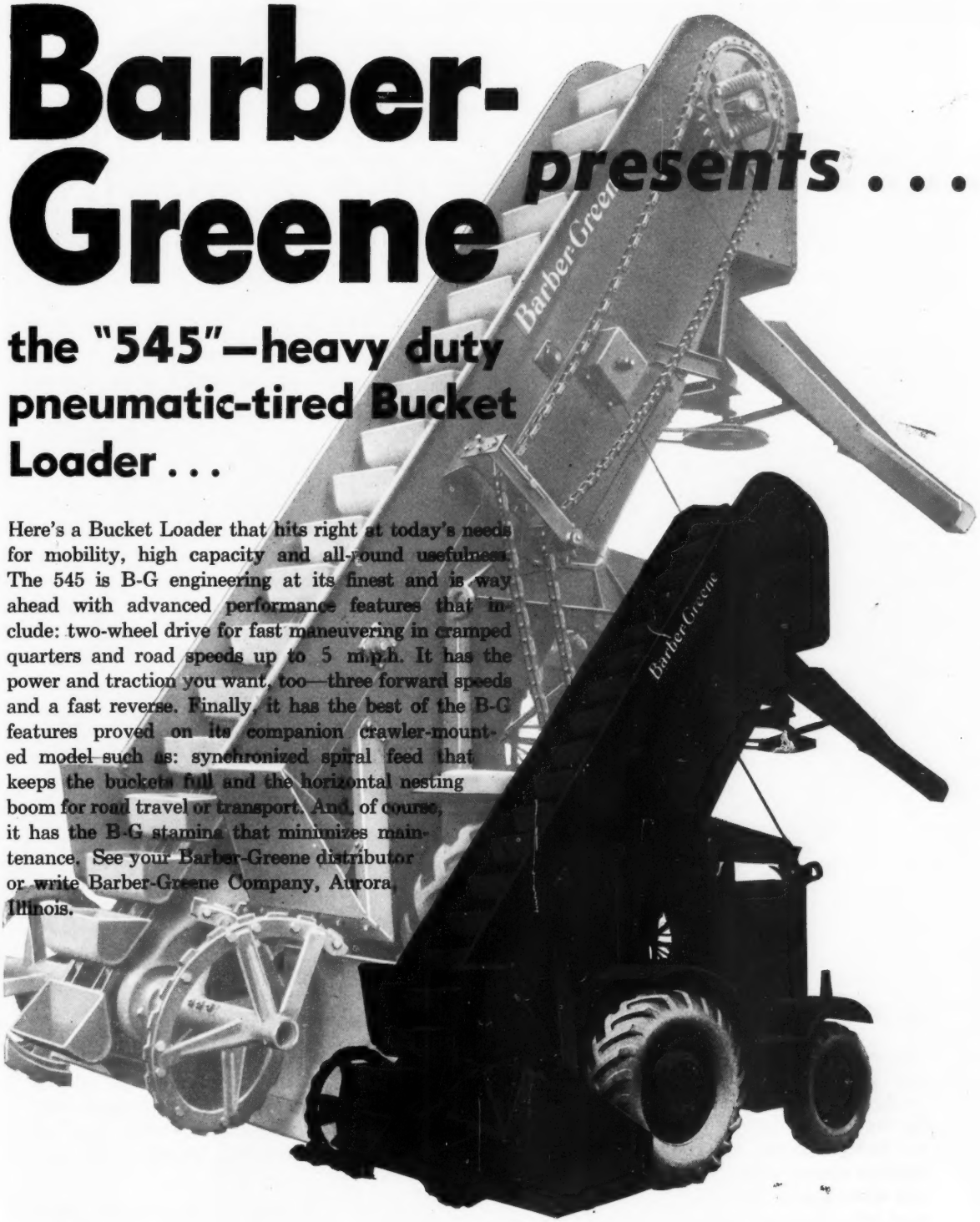
I want to congratulate you on the article written in the last issue of FLOW outlining the Crooks Terminal Warehouses, Inc. operation in Chicago. This, as you know, is my old company.

I want to take this opportunity to tell you how much we appreciate having our own article made up in pamphlet form for advertising purposes. Our article appeared in the September 1946 issue. We ordered several thousand of these

(Turn to page 14)

Barber-Greene presents . . .

the "545"—heavy duty pneumatic-tired Bucket Loader . . .



Here's a Bucket Loader that hits right at today's needs for mobility, high capacity and all-round usefulness. The 545 is B-G engineering at its finest and is way ahead with advanced performance features that include: two-wheel drive for fast maneuvering in cramped quarters and road speeds up to 5 m.p.h. It has the power and traction you want, too—three forward speeds and a fast reverse. Finally, it has the best of the B-G features proved on its companion crawler-mounted model such as: synchronized spiral feed that keeps the buckets full and the horizontal nesting boom for road travel or transport. And, of course, it has the B-G stamina that minimizes maintenance. See your Barber-Greene distributor or write Barber-Greene Company, Aurora, Illinois.

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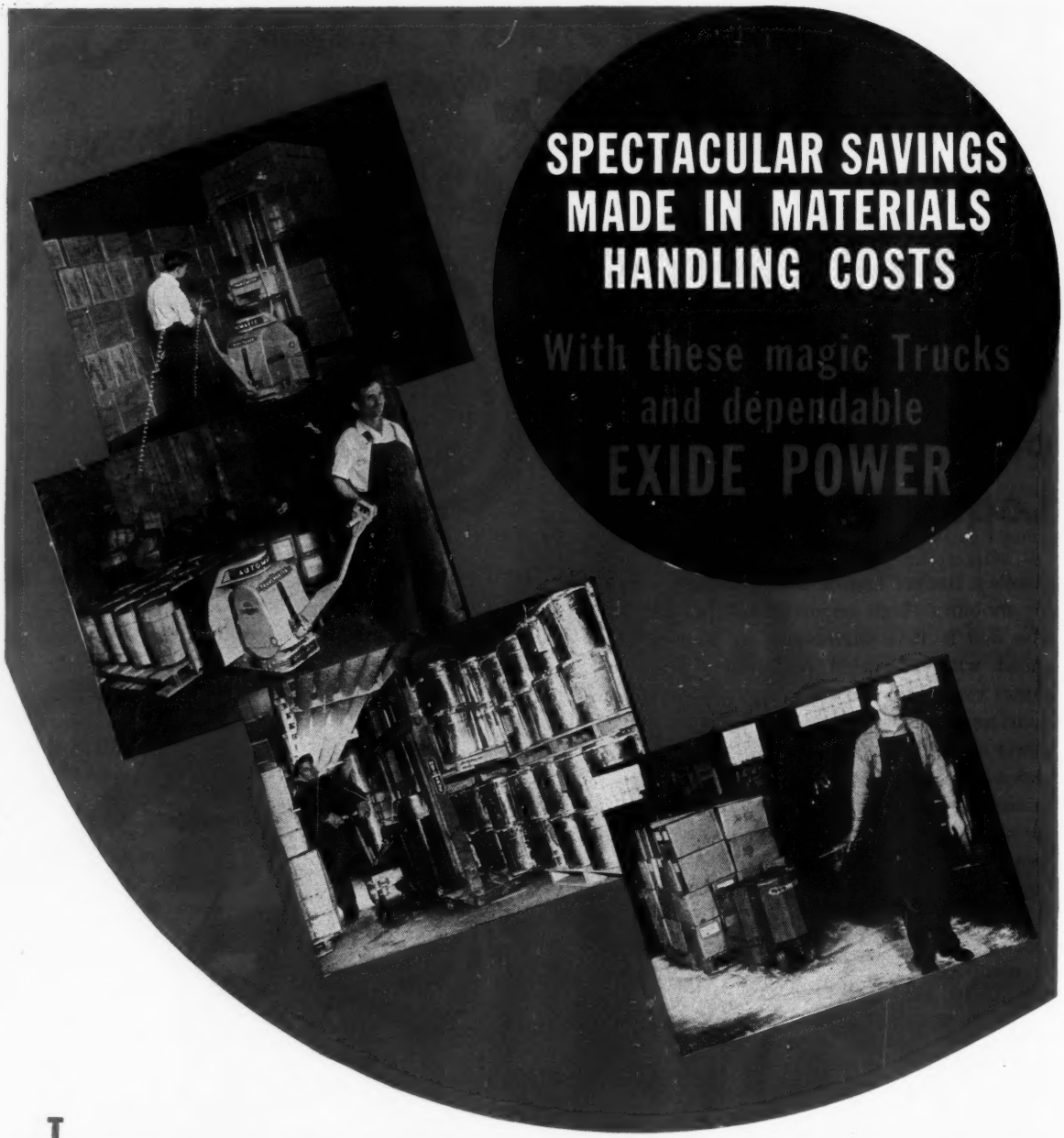
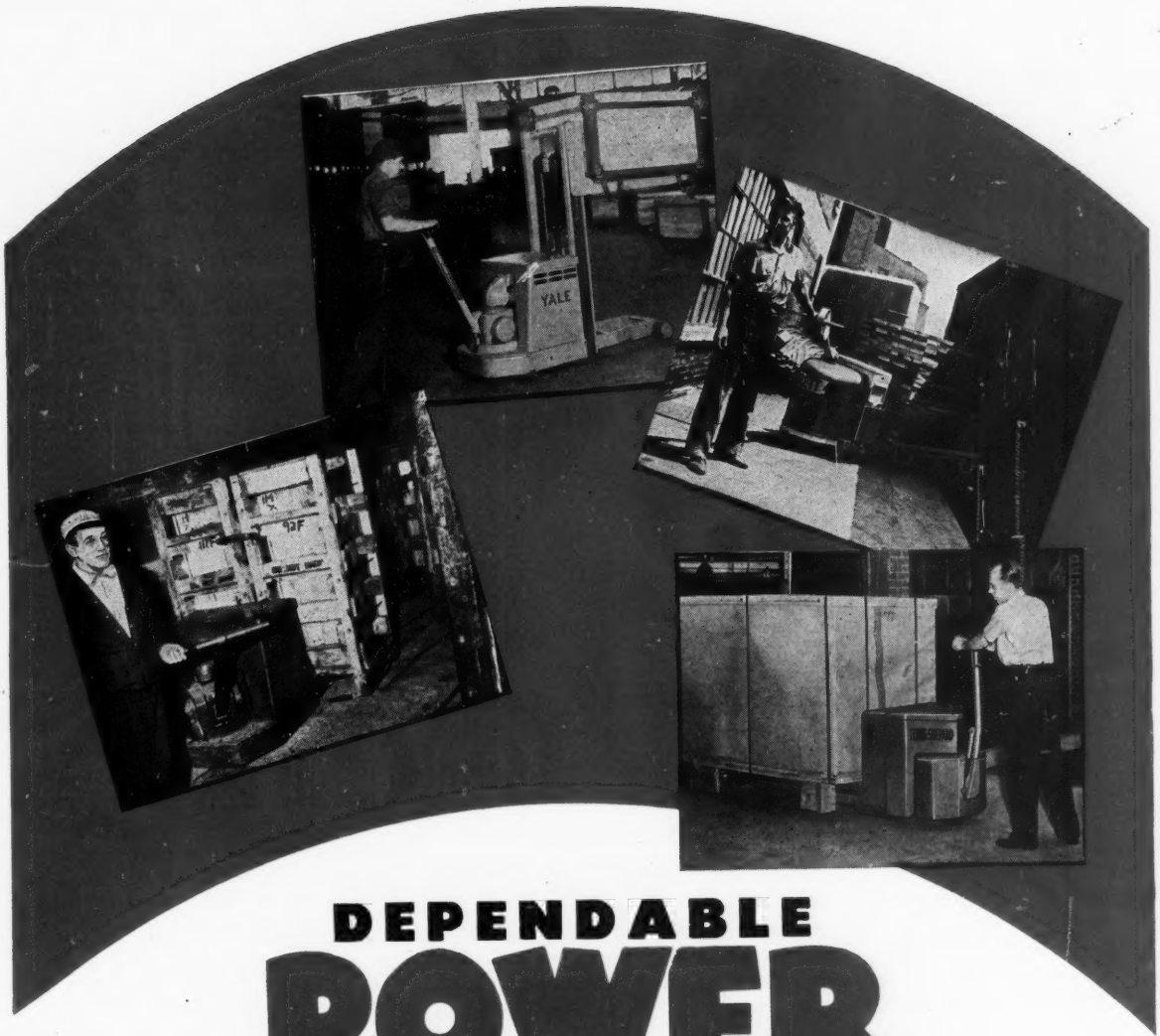


Increased production, faster materials handling and greatly reduced handling costs are some of the important economies brought to industry by the Electric Battery Hand Truck. It can be handled by one man with amazing ease . . . guided through narrow aisles, around sharp turns and up and down grades, always under absolute control. And when batteries are Exide-Ironclads, you are assured of dependable, safe, low-cost performance.

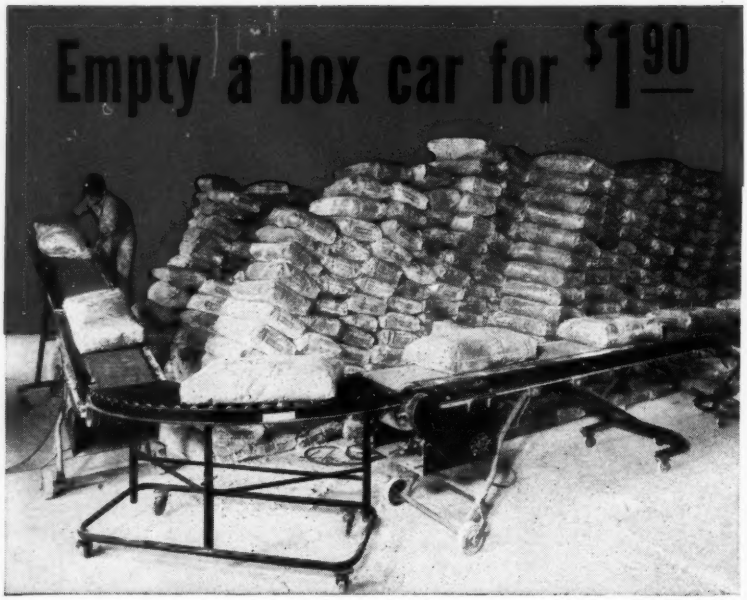
Exide-Ironclad Batteries have the *high power ability* required for frequent "stop and go" service . . . the *high maintained voltage* that repeated lifting and hauling demands . . . and the *high capacity* that assures steady, day-long performance with full shift availability. You can always count on Exides for dependability, long-life and ease of maintenance.

Write us for a FREE copy of Exide-Ironclad Topics which contains "Case Studies" of materials handling problems. It tells how to cut handling costs up to 50% . . . covers latest developments in handling materials from receiving to shipping.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto



DEPENDABLE POWER



former cost $17.10

DIRECT SAVING $15.20

When bagged cement and aggregates were handled by hand truck from box car to warehouse, it required six men working for at least three hours to empty the car and stack the bags. Now, since Rapids-Standard Stevedore, Jrs. have been installed, four men empty a car and stack the bags in half an hour. At 95c per hour this means a direct saving of $15.20 on every car unloaded. And, there are indirect savings in less wear and tear on floors and smaller demurrage charges since freight cars are not held for as long.

H. H. Dickenson Company of Detroit, who operate this system, also use it for handling metal lath, 50 and 100 pound chimed cans of plastics and roofing cement and the many other articles handled by a large building supply house. This equipment paid for itself in direct savings very soon after it was installed and continues to deliver comparable savings every day that it is used.

Rapids - Standard Stevedore, Jrs., Rapid Power Boosters, Rapid - Wheel and Rapid-Roller Gravity Conveyors and Floor-Veyors will save time and money in handling cartons, kegs, cases, bales, cans or packages. Write today for full information on how they can save time and money for you.

OFFICES IN PRINCIPAL CITIES

Manufacturers of

STEEL FORGED CASTERS - TRUCKS - CONVEYORS - POWER BOOSTERS

The Rapids-Standard Co., Inc.

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(Continued from page 10)

reprints to which you will note we have added sufficient reading matter and photographs to make a very desirable piece of advertising. Up to date, we have found that it has created unusual interest for traffic managers and other parties to whom the advertising is directed. They keep it for future reference, and as a result of these pamphlets we have already received numerous inquiries.—M. J. Tanzer, Assistant General Manager, The Cleveland Stevedore Company, Cleveland, Ohio.

To FLOW:
One of Many

During my recent visit to the Material Handling Equipment Exhibit, in Cleveland, I visited Booth #25, Man Saver Industries, Inc. We are interested in this company's product, but failed to obtain their address. Will you be so kind as to advise us where we can contact these people.—Wm. H. Gross, Production Superintendent, Baltimore Salesbook Company, Baltimore, Md.

This is but one example of the many letters of this type that have reached FLOW since the close of the first National Material Handling Exposition.—Ed.

To FLOW:
Missed the Show

We had intended to have a representative at the Material Handling Exposition, but on account of unforeseen developments we were unable to do so. We are interested in knowing about the various types of material handling equipment that would save in the expense of handling building materials. We would appreciate you sending us this information—C. H. Grayson, Grayson Lumber Company, Inc., Birmingham, Alabama.

A Contest You Can Enter!

Cash awards totaling $1,500 are offered by FLOW Magazine for prize winning papers on cost reductions effected by means of modern material handling methods. See the special Contest announcement on pages nine and 19 of this issue.

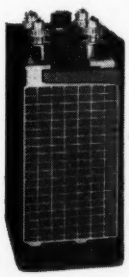
Power with a push!

Extra large plates in Gould Kathanode Batteries produce more power.

It takes powerful men to make shot-put records. It takes powerful batteries to meet operating schedules in modern material handling. That is why Gould Kathanode has been designed so extra power is packed into each cell.

and here is the Reason why—

The spun glass mats and unit-seal envelope that make up the well known Gould Kathanode unit hold all useful active material in place. Shedding is minimized. Sediment chambers are smaller. Plates are larger. The result is more battery in the same space.



Gould Kathanode Batteries maintain full capacity and have extra power for emergencies. Get the facts. Write Dept. 73 for Catalog 100 on Gould Kathanode Batteries for Industrial Truck and Tractor Service.

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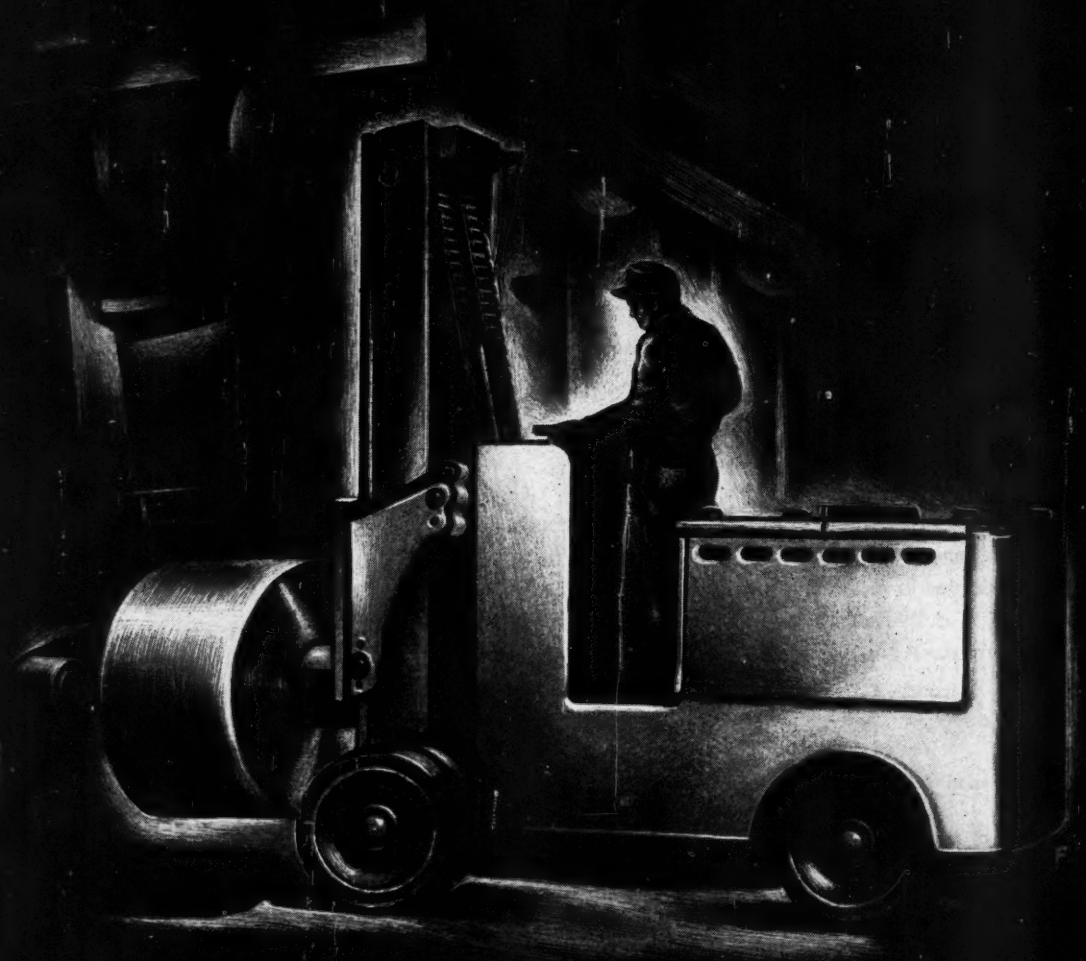

Best by far for high-speed production

In today's fast-moving production work the modern battery-powered truck has no equal. The development of modern high capacity batteries by Philco, gives trucks 10% or more additional work energy for steady, full-shift operation. Philco extra capacity types are widely used—XL, XVL, AMH and the famous long-life Philco "Thirty". Write for catalogs of specification data.

PHILCO

STORAGE BATTERIES

PHILCO CORPORATION • STORAGE BATTERY DIVISION • TRENTON 7, NEW JERSEY

Flow

The magazine which integrates material handling equipment into the flow of production.

Vol. 2, No. 6

MARCH
1947

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COVER PHOTO—By use of several independent hairpin hooks, this semi-gantry crane moves coiled rods through a pickling cycle that takes seven minutes. Mass-production is the keynote of this one-man operation. See details in the article starting on page 20.

How do you know you can't save money?

Lead and antimony prices have advanced 100% in the last year. Rubber parts and labor have increased accordingly.

In spite of this, a C & D Battery specialist will show you how to reduce your battery costs as much as 12% . . . by presenting facts and figures on C & D's *second* talking point: PRICE.

Consistent battery QUALITY is, of course, point number one . . . and *Aircool* construction with FOURFOLD insulation and retention merits your closest study and comparison.

When the next requirement for batteries appears on your desk, request C & D prices — from the electric industrial truck manufacturer on new equipment . . . or from the C & D factory or one of its district offices if the batteries are replacements.

PREMIUM POWER — BUT NOT A PREMIUM PRICE

A few territories are still open for competent representatives.

C & D "SIXTY"

Aircool BATTERIES

INSULATION FOURFOLD RETENTION

1. Vertical Fibre Glass Retainer
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STARTING AND LIGHTING BATTERIES FOR MOTORCYCLES • AUTOMOBILES • TRUCKS • BUSES • INDUSTRIAL EQUIPMENT

How Much Does It Cost? -- Cash for Your Analysis.

It will pay you to enter this important contest!

ON PAGE 9 of FLOW this month will be found the announcement of a series of prize awards. Please read this page, and then send in for an entry blank indicating that you will enter a paper in the contest. We feel that this is a particularly significant contest. While FLOW is a material handling magazine the awards are not being made for the best material handling methods, as might have been expected.

We know that behind every successful material handling method the broader concept of cost is involved. Therefore we want to encourage industrial men to think of material handling not only as a job of movement and layout, but also as a MANAGEMENT FUNCTION.

Successful material handling methods mean more than the right way to move a product from one place to another. Basically and deeply involved is the entire price structure of the product, the entire profit structure and the entire competitive position of the manufacturer. Therefore the subject of the award contest is significant and tremendously important.

It has always been a source of great wonderment to us to watch industrial engineers assiduously study the time and movements of an operator working at a machine whose predetermined speed largely controlled the speed of the operator. And yet when it comes to studying the cost of getting the material *up to* and *away from* the machine, such costs are lumped under such misleading cost terms as "manufacturing costs" or "general overhead".

We hope this FLOW award contest—the first annual one—will cause management to "dig into" these hidden costs. We hope we can help management to think of cranes, hoists, industrial trucks, conveyors, or manual devices, or any other material handling equipment, as an integral part of the cost structure rather than just as a part of the "machinery and equipment" account on the annual statement.

We ask our friends far and wide to enter this contest. We are sure much good will result. Undoubtedly all of us will benefit.

Irving B. Hexter

PUBLISHER

CRANES—RAM TRUCKS

Receiving... Storing... Pickling... Drawing... Annealing... Shipping

DO YOU HAVE A *Coil*

Steel wire and rod coils can poise an awkward handling problem. Practical thinking by National Screw & Manufacturing Company engineers has developed a handling system that provides maximum tonnage production.

THE MATERIAL handling problems at the Wire Mill (No. 2 Plant) of the National Screw & Manufacturing Company, Cleveland, Ohio, involve the mass movement of hot rolled coiled rods for mass production in wire drawing operations. The processed material is transferred one mile in a shuttle operation via highway trailer to the Company's No. 1 Plant where it is fabricated into thousands of different sizes and varieties of headed and threaded products.

Cranes and Ram Trucks

The weekly volume of raw material totals more than 1,000 tons. The hot rolled coils arrive in gondola cars on a spur that runs parallel to the 480-foot-long outside storage area. The latter is straddled by two gantry cranes which move the coils from the cars to the stockpiles.

The coils are stacked in the incoming cars in an upright position which permits easy attachment of the crane hook during the unloading operation. In the storage area, the material is stacked in rows according to size, alloy, etc., and each coil is identified by a metal tag.

Pre-processing steps at the Wire Mill are pickling, two wire drawing steps, and annealing. From the storage yard the coils are transferred to the pickling room by a 2,800-pound capacity ram truck equipped with an 80-inch boom, which picks up the wire directly from the crane hook in the yard.

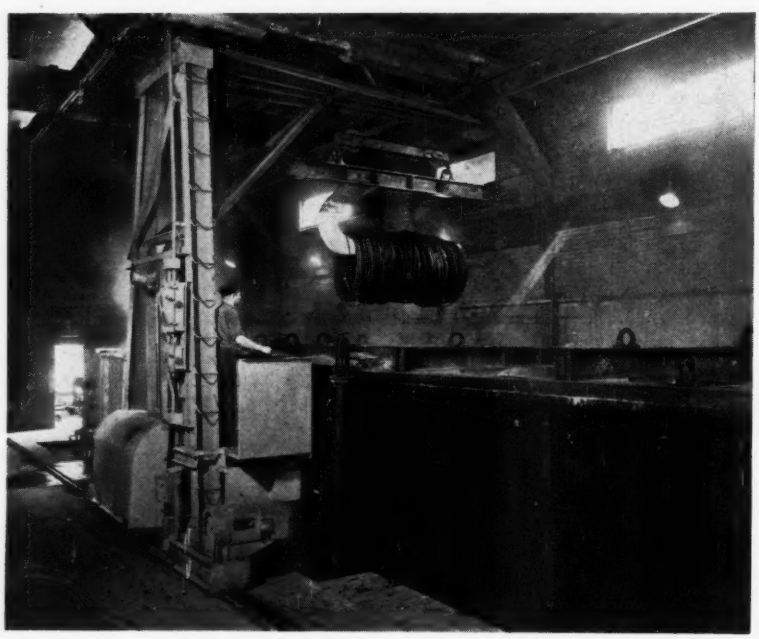
As the truck enters the pickling room doorway, it approaches a large hairpin hook suspended from a 7-foot-high angle iron support (with a welded V-shaped locator to center the hook on the support). The truck operator threads the coils on the hairpin hook, then returns to the yard for another load. Meanwhile the semi-gantry crane serving the 150-foot-long pickling room picks up the load on the hairpin hook and starts the material through the four step processing cycle by depositing the demountable hook in the acid tank.

The pickling is a production line operation involving the passing of the coils through successive baths in a series of adjoining tanks. The semi-gantry crane covers these over the 150-foot length of the room. At the end of the acid, rinse and lime tanks, the coils are ready for the flash baker, a high temperature oven which is the last processing operation on the line.

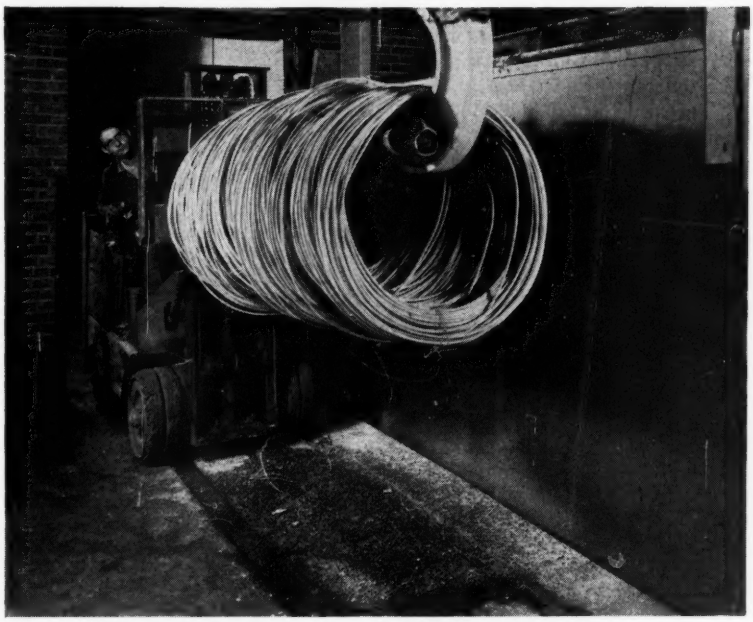
Every seven minutes a load is finished through the exceptionally efficient crane handling and by use of eight independent hairpin hooks. The loaded hooks are advanced from tank-to-tank, and between the receiving and dispatching stations. The finished loads are deposited by the crane at the opposite end of the room on another angle iron support similar to the one previously described. The suspended loads are again picked off by the ram truck.

It is interesting to note that the crane operator in this department must keep eight loaded hairpin hooks passing through the processing tanks and flash baker. Keeping in mind that a load is finished every seven minutes, the operator must keep the crane in almost con-

Crane moves loads through pickling and baking operations. This one-man handling method is exceptionally efficient.



Handling Problem?



Above: Ram truck removes pickled loads from hook. Hook locators are on structural support. Below: Contracted grab from crane is lowered into drawn coil for removal from reel.

stant motion advancing the hooks with their 2,500-pound loads in sequence from one tank to the next.

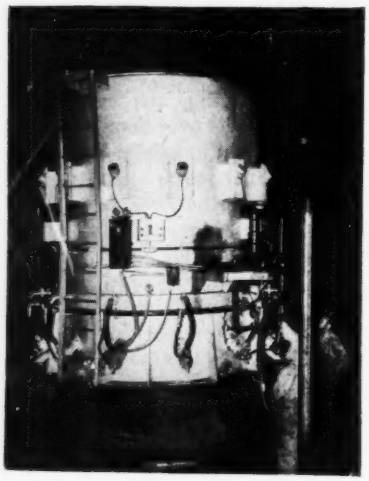
Traveling Bridge Cranes Speed Handling

From pickling, the ram truck moves the coils over floor scales for weighing, then to intermediate wire drawing. The material is deposited vertically on the floor at one end of the room where a one-ton capacity traveling bridge crane picks up the individual coils and transfers them to the wire drawing reel. The drawn wire is removed from the finished reel with the aid of a second traveling bridge crane equipped with a special four-tined contracting grab. The unit is lowered inside the coil and the tines permitted to expand, raising the coils from the bottom in a horizontal position for transfer to a waiting wire buggy. Each of the numerous drawing stations in this department is equipped with a similar dual overhead bridge crane arrangement, one unit for feeding the drawing machines and the other for removing the finished wire.

Annealing, the second step, is of necessity a mass production operation to keep up with the wire drawing section's output. Key to handling in this department is a pendant-controlled, 10-ton bridge crane straddling the working area from a 25-foot height. The equipment includes three portable bell-type gas furnaces, spindles upon which the coils are loaded, inner sealing covers, and cooling covers. This equipment is kept constantly moving between six furnace bases. It is interesting to observe that with this type of furnace equipment in conjunction with the use of the bridge crane, the furnaces are "brought to the job." This speeds production because three vacant furnace bases can be prepared while the furnaces are in operation. This permits the transfer of the furnaces at the completion of an annealing operation to an adjacent prepared furnace base with no waste of time.

Loads up to 5,500 pounds are deposited on the spindles, depending upon the size of the coils. The spindles are loaded in a pit. The crane also lowers the coils into position and the material is manually guided to rest on the units.

The loaded spindles are either temporarily stored or moved into position at once at one of the vacant



Pendant-controlled 10-ton bridge crane lowers portable annealing furnace into position.

furnace bases. In positioning the spindle load over the furnace base, the crane operator is aided by a vertical seven-foot pole which automatically centers the load. The crane then deposits the sealing cover over the spindle and completes the operation by super-imposing the portable furnace.

At the completion of the annealing operation, the furnace is removed to the next prepared station and a cooling cover is placed over the sealing jacket to permit gradual cooling to room temperature. The covers are then removed to waiting furnace bases and the spindle carried to a special pit where the coils are removed by the crane and stored in a horizontal position.

Tractor pushing 4,500-pound loads of drawn wire on trailer for processing at next plant.

The ram truck is employed to return the annealed material to the pickling room for a second treatment and then back to the wire drawing section where the semi-finished coils pass through the final drawing operation. They are then loaded on wire buggies which are towed by tractor to the shipping dock for transfer to the main plant.

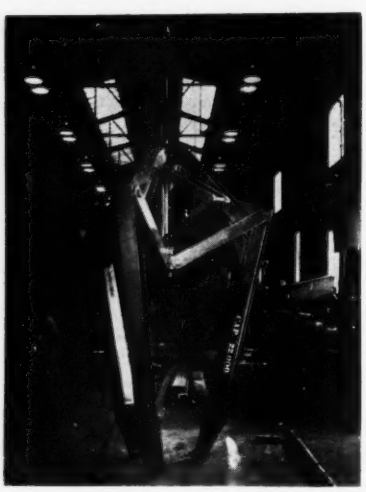
In accord with the advanced handling practices of this plant, the shipping practices also depend upon mechanized equipment. The company's 30,000-pound capacity semi-trailer is backed up into the sunken loading dock, bringing the trailer bed flush with the dock floor. The trailer's tail gate is re-enforced so that by dropping it across the aperture between dock and trailer, the unit serves as a dock plate.

The buggies (six 4,500-5,500-pound buggies make up a load) are pushed by industrial tractor into position in the trailer and the loads fixed with wheel chocks and chain fastened across the trailer bed. At this point the wire coils are ready for the short trip to the No. 1 Plant for further processing operations.

Thus, from the incoming gondolas to the shipment of the pre-processed material on the semi-trailer, the continuous flow of thousands of tons is maintained with marked efficiency. An impressive feature is the coordination of ram trucks with the crane in the pickling room. Similarly, effective handling is again noticeable in the wire drawing department, with bridge cranes feeding and removing the stock and ram trucks maintaining the flow to annealing. Of special interest is also the crane handling in the annealing department, where ram trucks again are integrated in the flow of coils to the next operations. Throughout, it's a well-engineered material handling system, keyed to a high production set-up to meet the main plant's continuous demands for great quantities of raw materials.

15-Foot Tongs

Simplification of transporting and storing 11-ton stacks of locomotive wheel tires ranging in size from 2½ to 7 feet in diameter is made possible through the type of giant, automatic tongs shown here. Maximum load with jaws extended is a six-foot stack of steel tires 7 feet in diameter. A lock-



ing device enables the crane operator to handle 6-foot-high stacks of tires. The automatic tongs are 15 feet high, weigh 3485 pounds, and do not require riggings or chains on the loads to be lifted. Ground crews are said not to be needed. Hardened lugs have been incorporated into the three jaws which have a maximum opening area of 87 inches. The tongs are made of special analysis steel in designs emphasizing strength and simplicity.—Courtesy, The Heppenstall Co., Pittsburgh.

CASTERED CARTS FOR CLEAN-UP

FIFTEEN of these castered rubbish box carts are used by Halle Bros. Department Store, Cleveland, Ohio, to keep its downtown store clean and

presentable. Specially designed, the cart has a beveled lower front edge allowing a "push-down" to up-end it and position it for convenient unloading. The unit is about 5-feet long, 3-feet high and 3-feet wide.

Of light, veneer and wood construction, the large-capacity units regularly transport 250 to 350 pounds of waste paper and rubbish to the baler. Of 3-wheel, rubber-tired construction, they can be easily and quietly moved throughout the garment, marking and receiving rooms, where they are normally stationed. Night porters use similar carts of about half the size shown.—Courtesy, Halle Bros. Co.

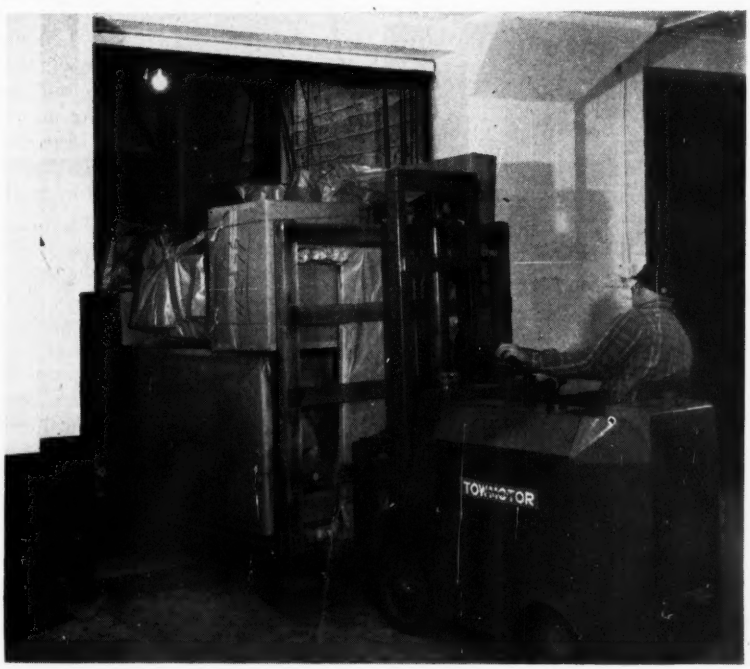
In Household Goods Storage, too . . . .

Above: Loaded by van gang, castered unit carrier is then moved to next station - - 240 cu. ft. of material.

The HORSE and BUGGY DAYS are OVER

CASTERED SKIDS FORK TRUCKS

Below: 240 cubic feet of furnishings go on elevator at one time, saving many man hours.

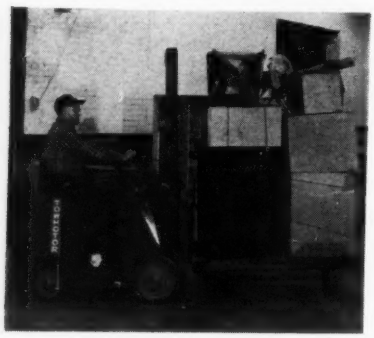


This progressive storage company adopted a "unit" carrier for in-plant handling of household goods—an innovation believed to be unique in this field. It has saved 18.2 per cent of the former handling cost, and will save up to 25 or 30 per cent.

EARLY in 1946 The Neal Storage Co., Cleveland, redesigned and greatly increased its parking, shipping-receiving, packing and weighing facilities as part of a plant-wide modernization project. A tonnage increase of about 59 per cent was one of the immediate results. President H. C. Neal realized that the greatly augmented volume of household goods could no longer be economically handled by the old-fashioned piece-by-piece method. The handling practices that prevailed while dobbin did the hauling in vans had to be brought up to date with the age of the huge and swift semi-trailers. What was needed was a load "unit" carrier that would bring in-plant handling methods up

to par with the modernized and increased plant facilities.

The outcome of many investigations and studies was the type of



Fork truck also moves small orders on skids, avoiding costly piece-by-piece handling.

high-gated live skid shown in these photos. The dimensions of the carrying surface are 5′ x 8′, with a two or three-sided frame approximately 6′ high. The unit is mounted on rubber-tired swivel casters. While the empty carriers can thus be conveniently pushed about, the loaded ones are hauled by means of a 2,000-pound fork truck.

For this purpose, an angle iron guide is attached longitudinally on the underside of the skid bed. The guide is slightly flared at either end for easy entry of the truck fork. The two angle irons are spaced apart so that the fork fits snugly between them, giving the truck operator full control of the load while transporting it. During travel one end of the carrier is elevated two or three inches on the fork, rolling on the two swivel casters at the other end. Thus the operator "steers or swings the load like a semi-trailer."

The carrier is spotted alongside the highway trailer to be unloaded, and the individual pieces are loaded into it. This operation requires only the regular two or three-man van crew—no longer the additional five-man gang that used to move the pieces individually to the desired location. Instead, the fork truck operator does this job by himself.

The entire load—approximately 240 cubic feet—may be moved either to the packing department or to the storage floor. In the packing department, the operators work from one carrier to the other. That is, they remove the single pieces from the incoming load, then replace the packed items on another carrier for further "unit" movement. The completed load is then run by the fork truck on the elevator.

This method has been adopted only within recent months, and the present four-foot aisles on the storage floors are not wide enough to accommodate the five-foot-wide skids. Hence the household goods are moved from the elevator area to location on the storage floor by use of dollies. The management plans to widen the aisles gradually for access of the new carriers. It is expected that the reduced amount of handling will more than compensate for the extra space needed for the wider aisleways.

Incidentally, a slightly larger live skid is also used. This measures 6′ x 10′, also with a 6′-high three-sided retaining rack. While it has stake sides, the standard unit is equipped with permanent corner posts. These larger units, however, are employed chiefly as auxiliary carriers for certain bulkier types of furnishings. The bed of both types is made of ¾-inch plywood.

The advantages of the present operation can be readily appreciated when the present practice is compared with the former manual, piece-by-piece method. At that time each incoming trailer required its gang of four or five men to keep the items moving as they were handed out by the van gang. Now

Same fork truck also handles boxed loads, eliminating back-breaking manual labor.

the van gang operate with complete independence. They load the household goods into the unit carriers and the fork truck operator hauls them away as quickly as they are completed and inventoried. He can serve five unloading highway trailers or more at one time. Thus the load unit method has also reduced terminal time, besides eliminating many hours of waiting time at the elevators. Both of these advantages will be appreciated by the storage executive.

The fork truck also performs other jobs in addition to hauling the load units. It handles smaller orders on 40″ x 48″ flat skids, which can be transported through present aisles. It is interesting to note in passing that such small-order handling used to require four or five men, whereas now the truck operator and a helper are sufficient to load the skid for power handling. The fork truck also saves considerable time and backbreaking labor in moving heavy skidded export boxes or crates between packing, weighing and shipping stations.

Thus the load unit method has entered the household goods storage field. The practice for the mass-movement of these furnishings has advanced in-plant handling at the Neal Storage to the same level as the other improvements made. Years ago, when horse-drawn vans were the transporting medium, for example, an 8′ x 10′ unloading dock was sufficient. Then came the small motor truck, and now it's the 32-foot trailers. Today, 10 of these trailers can back up simultaneously to the company's modernized 120-foot long receiving-shipping dock.

The present mass-handling method is not only in step with the advances in over-the-road carriers, but it is likely to be the forerunner of new trends in this field. While this is speculation, it *is* conceivable that the large load units will be run into highway trailers for movement between different branches of the same company. Or loads of this type may be hauled by trailer directly to the residences.

Regardless of these or other eventualities, however, the economies already achieved at the Neal Storage Co. have been noteworthy, despite a relatively short trial period. The sharply reduced handling time and effort resulted in a reduction of 18.2 per cent in the direct handling cost over the piece-by-piece method, according to President Neal. This figure does not of course include the additional economies effected by the over-all improvements in plant layout, from which the in-plant "unit" load method developed as an integral part.

FOR POWER CONVERSION AC to DC

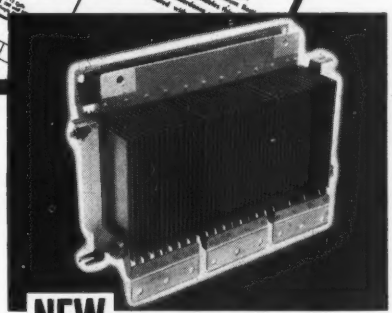
Specify Federal's Standard Rectifier Equipments

Federal
STANDARD SELENIUM RECTIFIER EQUIPMENTS
WRITE FOR BOOKLET — This 12-page illustrated booklet gives electrical data and prices on Federal's complete line of standard Selenium Rectifier Equipments. Whatever your D-C needs, you'll find a Federal rectifier that's designed for the job. This booklet is yours for the asking. Write for your copy of Bulletin E713.
Electroplating Equipments
Industrial Truck Battery Chargers
General Purpose Battery Chargers
Cathodic Protection Equipments
Industrial Power Supplies
Central Station Battery Chargers
Telephone Battery Chargers
Power Supplies
RATINGS

WHEN YOU NEED D-C from an A-C source, consider the time - and money-saving advantages of Federal Selenium Rectifiers. They operate *silently*, without tubes or moving parts which require frequent replacement. They're ruggedly constructed to withstand shock and vibration. Service life is practically unlimited, with almost no attention or maintenance. And they run *cooler*, too —start *instantly* when the power is turned on.

The Selenium Rectifier is an IT&T development, pioneered and perfected in this country by Federal. And Federal rectifiers have given years of outstanding service with all types of equipment in all branches of industry — every unit backed by many years of experience in design and manufacture.

Made by America's Largest and Oldest Manufacturer of Selenium Rectifiers!



NEW 48-plate Federal Selenium Rectifier provides more power output in less space than any previous unit of its type.

Federal Telephone and Radio Corporation

In Canada:—Federal Electric Manufacturing Company, Ltd. Montreal.
Export Distributors:—International Standard Electric Corp. 67 Broad St., N. Y. C.

An IT&T Associate

Newark 1, New Jersey

View of the monitor cleaner (without cyclonic blower) keeping ceiling, pipes lint-free.

Keeping LINT *in* ITS *Place*

Cyclonic cleaner in spinning room: Draft is down from circular distributor, up from fan.

MONORAIL CARRIER

Automatic monorail lint cleaners in cotton mills are doing a tremendously important job in terms of higher production and many operating economies.

LINT, like dirt, is "matter out of place." When it accumulates in textile mills it is known to become an obstacle to quality and economy factors in production, as well as a fire hazard and a hindrance to efficient plant maintenance. To prevent untoward conditions of this kind, a number of leading textile mills are using self-propelled, automatic blowers that travel on loops of monorail track through lint-producing departments. The equipment is shown in the accompanying photos.

The complete blower installation, attached to the drive unit, consists of (a) the "cyclonic" fan in a distributor housing which directs a twisting column of air down to the machines, and (b) a propeller-type fan which sends an air stream directly against the ceiling.

Thus the blowers traveling on the overhead monorail track keep both the production equipment and the ceilings effectively free of lint.

The advantage of this *controlled* and *systematic* cleaning method was originally demonstrated in long draft spinning, where an excessive amount of lint is produced, with a resultant extra strain on the spinners. The lint dropped into the yarn being produced and thus increased the number of gouts or slubs. At the same time the heavy amount of hand cleaning tended to interfere with the output. The application of the overhead monorail blower system overcame these obstacles effectively.

Since then, the blower method has been extended with equally good results to other cotton mill operations, among them: high-speed winders and spoolers. More recently, a new type of fan has been developed for use in the card room. Here too the equipment has paid off in short order through more spinning and less cleaning. Since the cyclonic cleaners travel beneath areas reached by humidifier heads, a more even distribution of humidity into the work has likewise resulted. Another development has been the use of traveling propeller-

BUSINESS MONEY-SAVER

Hyster's business is to save money by reducing the high costs of handling materials. Depending upon the industry or type of business, these materials handling costs account for 10% to 55% of total manufacturing and warehousing costs. Hyster industrial trucks reduce these costs. All Hysters are gas powered; all are on pneumatic tires.

Hyster trucks load and unload, transport, tier easily and quickly... Save time, money and manpower.

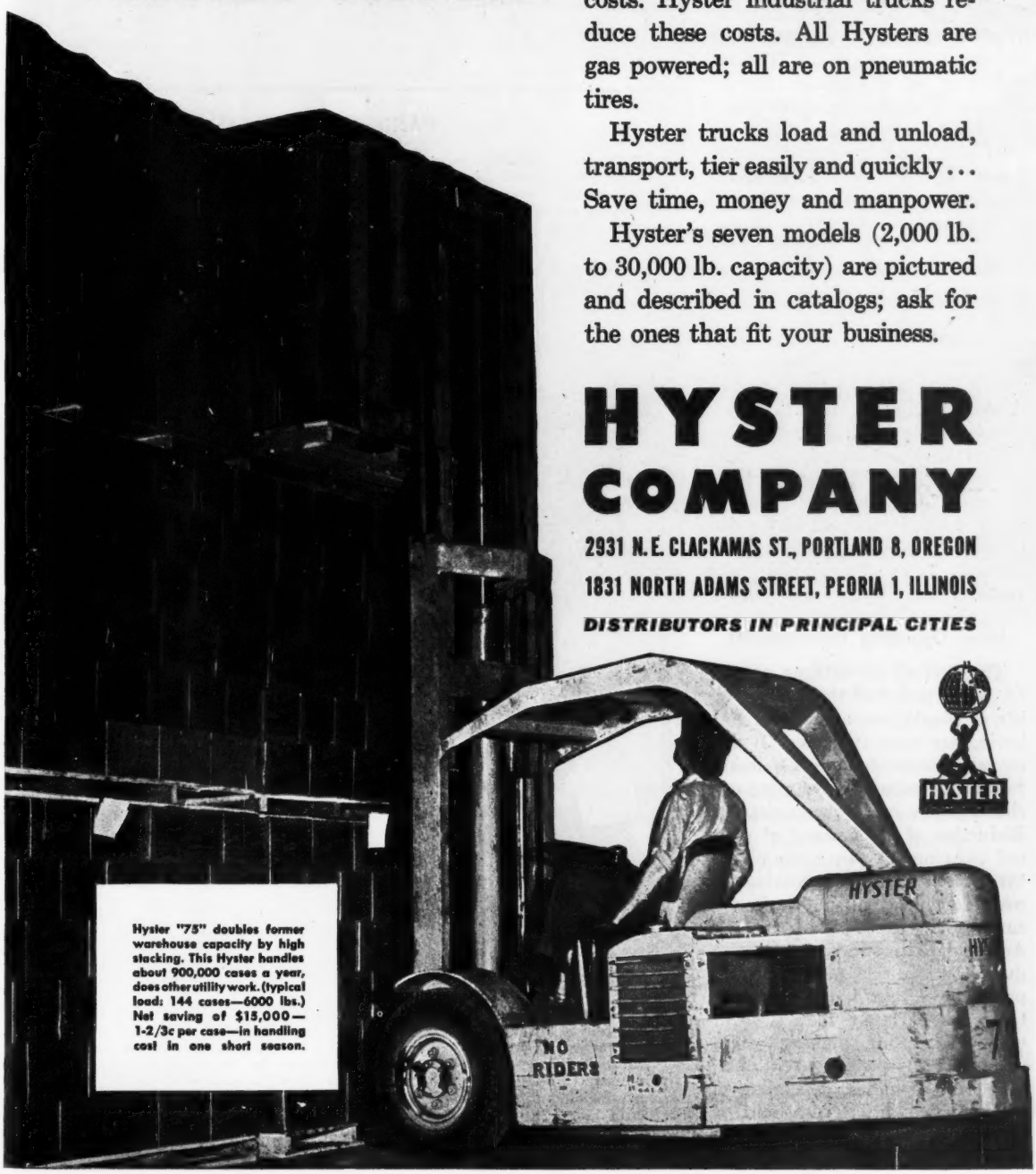
Hyster's seven models (2,000 lb. to 30,000 lb. capacity) are pictured and described in catalogs; ask for the ones that fit your business.

HYSTER COMPANY

2931 N. E. CLACKAMAS ST., PORTLAND 8, OREGON

1831 NORTH ADAMS STREET, PEORIA 1, ILLINOIS

DISTRIBUTORS IN PRINCIPAL CITIES



Hyster "75" doubles former warehouse capacity by high stacking. This Hyster handles about 900,000 cases a year, does other utility work. (typical load: 144 cases—6000 lbs.) Net saving of $15,000—1-2/3c per case—in handling cost in one short season.

$1,500 in Cash Awards!

This prize money will be awarded for winning papers in the FLOW contest on material handling costing. You may have before-and-after figures suitable for a winning paper. See the announcements on pages nine and 19.

type fans for the systematic cleaning of monitors in mill buildings.

The cyclonic drafts of air (in the enclosed fan) are set up by forcing both high and low velocity currents simultaneously from the crescent-shaped openings in the distributor over each side of the frame while the unit travels overhead. The variation in velocity causes the air currents to swirl and circulate freely around the roving and across the creel board and upper parts of the frame. Thus each side is subjected to a cyclonic column, one directed forward and the other back. Hence the cleaning action takes place over a wide area, reaching all parts and with no interference from opposite currents.

The fast velocities of air currents flow from the crescent openings and are directed down to swirl beneath the roll stand and around the lower boards of the creel. Slower velocities reach the roving in the creel and other parts of the frame. Roving stored on top of the creel, directly beneath the path of the distributor, is cleaned by two gentle currents from the special tube vents.

Many Operating Improvements

The over-all advantages, as noted over a period of time in a number of plants, are numerous. Following are some examples. 1. Removal of excessive lint on spinning, twisting, winding and warping machines before it can accumulate. 2. Reduction of the amount of manual cleaning. 3. In some plants, the system eliminates cleaning the roving creels, wiping out backs and running out the thread guides. 4. Accumulation of lint is greatly reduced on the ring rails and other parts above. Hand cleaning operations are normally reduced sufficiently to permit spinners to handle from 20 to 50 per cent more long draft spindles, depending on prevailing conditions in a mill.

As a result of the foregoing operating improvements—all relating to cleanliness—there has been less breakage. For instance, in one mill running 8's and 13's yarn, a 53 per cent reduction was noted in ends-down on long draft spinning. These figures were the result of a 17-hour test.

Following is a summary of the operating improvements obtained with the propeller-type fan, which throws a high-velocity column of air toward the ceiling as the cleaner travels around its loop. 1. Accumulation of lint is prevented on pipes, shafts, wires and other overhead equipment. 2. Troublesome hand cleaning or blowing down is required only at long intervals. 3. No production time need be lost during such operations. 4. Because bunches of waste no longer fall into the work, increased production of a more uniformly clean yarn is possible. 5. Clean ceilings contribute to more attractive working conditions.

Thus the end result is a smooth-running clean yarn produced at a lower cleaning cost, with this further advantage: in the loom or knitter the better yarn reduces breakage, stoppage, waste and seconds.

It pays to keep lint in its place.

DRUM HANDLING MADE EASY

HEAVY drum handling is made fast and easy with a tong grapple and overhead one-half-ton hoist at Westinghouse Electric Corporation's Mansfield, Ohio plant. Here the operator picks up a drum of fluid preparatory to refilling bonderizing tanks. The hoist-grapple combine easily holds the drum while the plug is removed and the fluid drained. Because the work area is bordered by

the big cleaning tanks, the hoist was bridged on crane-ways running the length of the area in order to provide maximum use through both lateral and transverse movement.

***Counterbalances attached to the tank covers in the background make lid lifting easy. Cables from the covers pass through pulleys mounted near the top of the cleaning tanks. This location permits the weights to ride directly below in metal tubes fastened out of the way on the wall—a natural upright support for the system.*—Courtesy, The Westinghouse Electric Corp.**

HOW to handle a ton of material easier, faster . . .

for a matter of a few pennies

It's costing you plenty per ton if muscle is doing your handling. But with a Yale on the job, cost becomes a matter of "pennies—per—ton."

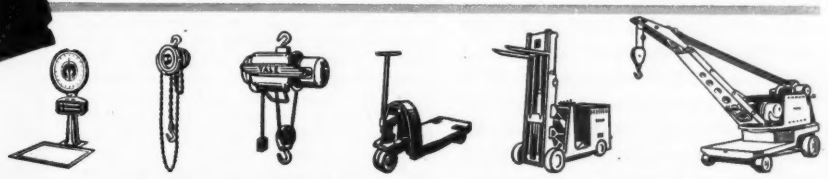
Of course, costs vary depending on the type of material handled and the equipment used. But in every case material handling costs take a substantial drop when Yale-power replaces manpower. The reasons are simple: Yale-power gives you more output per manhour, increased production, lower unit cost . . . faster, safer, more efficient handling. Wasteful rehandling is eliminated, worker's energy conserved, storage space increased.

For more detailed facts on how Yale Material Handling Machinery can cut your production costs, phone our nearest representative, or write direct to: The Yale & Towne Manufacturing Co., 4530 Tacony Street, Philadelphia 24, Penna.

YALE

MATERIAL HANDLING MACHINERY

CUTS PRODUCTION COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY



KRON INDUSTRIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC

CONCEPT OF A NEW WORLD

By EZRA W. CLARK

Vice-president and General Manager, Clark Tructractor Division of Clark Equipment Co., Battle Creek, Michigan

MODERN mass production pours an ever-increasing volume of raw material, processed commodities, semi-finished products into the factory. This imposes greater burdens of weight and hours of labor upon the worker.

The result has been labor discontent, forced consideration by management of working conditions, shorter hours, increased pay. Individual demand has increased, with resultant shorter hours and higher rates.

Volume flow of material, raw and semi-finished, continues and even increases. Equipment manufacturers have done a fine job in the designing and building of machines to handle bulk materials. The actual result has been a still greater volume of finished products resulting in a demand for more men, stronger men. It takes two decades to grow a man. How can we make men quicker and stronger? Give the worker mechanical horsepower. Unite brain power with muscle power through a machine and thus create manpower.

This concept means a new world —a world where the burdens of production are taken off the shoulders of men and placed on the steel fingers of machines to lift and carry and tier.

The National Material Handling Exposition has called management's attention to the most modern and practical manner in which our production may be increased, the quality of our products bettered, the cost of the product reduced and the working conditions of our employees bettered.

A careful survey of American industry indicates that 80% of unskilled labor in American industry is used to move things. If my theory is correct that unskilled labor adds nothing to a product except cost, then management must move toward a productive economy. This means a greater percentage of skilled labor to handle and move materials according to modern methods.

Thus the adoption of modern material handling methods by management ushers in the great postwar epoch of production and prosperity for which the world looks with avid expectancy to America.

1947 EXPOSITO

More than 8,000 conventioners from all parts of the U.S. and foreign countries attended the first National Material Handling Exposition, Cleveland, January 14 to 17, which was rated a complete success by exhibitors and visitors alike. The informative addresses and illustrated talks on the material handling problems and methods of specific industries gave eager audiences a wealth of ideas on up-to-date practices. For the benefit of those who

THE BEVERAGE INDUSTRY

By WILLIAM GEISLER

Vice President and Director of Operations and Engineering, Pepsi-Cola Co., Long Island City, New York

The handling of bottles in the beverage industry has been reduced from seventeen times to four in the last decade by the use of modern material handling machinery.

The Pepsi-Cola Co. is now engaged in a program of relocating its plants with the aim of providing the most efficient handling of materials. Previously plants were planned for location near distribution centers but the present trend is to place the plant in the best location for material handling and keep only the warehouse near the distribution point. Also under way is a redesign of the company's packages to facilitate handling.

The importance of the consideration of handling cannot be overemphasized because only eighteen of every fifty pounds handled is the net product. Our company uses many types of material handling equipment but investigates carefully to make certain that a fair return in savings is achieved for the investment. Another reason for extreme care in the handling of bottles in every operation is that the gross value of sales is less than the value of the packaging.

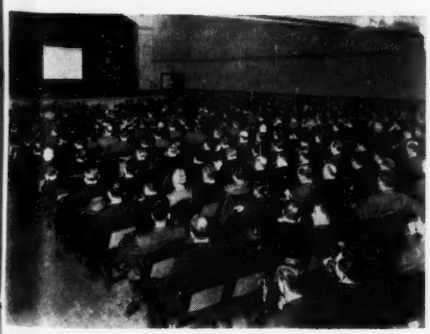
Visitors from all parts of the U. S. and from many foreign countries viewed the exhibits.

Panoramic view, at left, of one of the exhibit floors. "Better than expected" said exhibitors.

TON ROUNDUP

could not come to Cleveland this time, FLOW herewith presents condensations from some of the papers given, thus bringing a vital and important part of the show to them. Other papers, both condensed and full-length, will appear in next month's issue. For a complete understanding of the significance of this trail-blazing Exposition, readers are also referred to the advance report in FLOW for March—"A Success . . . and an Obligation."

Talks on the problems of specific industries gave eager audiences a wealth of information.



CONVEYOR SYSTEMS AND PALLET HANDLING

By ROBERT C. BRADY

Assistant Chief Planning Engineer
Helene Curtis Industries, Inc., Chicago

OUR company produces over 300 cosmetic items of two general types. Our plant is equipped with an inside railroad siding from which we receive as many as 51 different types of bottles in carload quantities. We frequently receive as many as 10 to 12 cars of gallon sizes at one time. We made an extensive study of our warehousing problems and reached the conclusion that the handling of incoming raw materials could be best accomplished by palletizing. We adopted a standard 48" by 48" pallet for this purpose, and have been using Clark and Towmotor Fork Lift Trucks with excellent results.

One special problem in our palletizing was the handling of carboys of acid. We did not wish to lay them on their sides as they might develop into leakers, thus losing some valuable raw materials. We wished to palletize the carboys without making a permanent type of specially designed pallet. We hit upon the idea of designing a frame similar to the insert of a four gallon size carton. This framework can be assembled and mounted on top of the pallet in very short time, and allows us to stack 4 carboys per pallet three pallets high. We have also found the 48" x 48" pallet convenient for handling 20 or more bags, of raw materials per pallet. Also, they accommodate four barrels totaling an approximate weight of 2,500 pounds. This type pallet also handles as well the cartons that our 51 types of glassware are received in. They pile freely and handle with extreme ease. We have also found a number of other items which were difficult to palletize. For those we have developed a crate type of framework with a drop gate on one side to permit ease in placing stock in them and issuing of stock from them in a triple stacked position. While palletizing has proved very satisfactory in warehousing, we encountered somewhat different problems when we came to actual production.

Seventy-five per cent of our bottles are filled on new high-speed filling machines. In view of this speed-up we decided that conveyorizing would provide the high degree of flexibility necessary to keep production flowing, maintain a clear and unobstructed working space, and at the same time yield high economy in operation.

To give one example:

The capacities of systems #6, #7, and #8 are approximately 8500 cartons per eight hours, which represents roughly 300,000 pounds of shipping with only 10 per cent of the former manual effort required to do the same job. Without our modern conveyor system, our capacity was limited to 4500 cartons.

The conveyor system has enabled us to speed up our order picking operation from 1.32 orders per man hour to 4 orders per man hour. Our conveyor systems are designed so that any one of our 75 cartons, ranging in size from a small 10" by 6" by 7" or an odd-shaped carton 52" x 4" x 6" may travel over any of the complete systems without any interference. No one was any more surprised than we were to see

(Turn to page 46)

1¼" strapping is anchored to car walls about four feet back of end of upper tier.

A STRAPPING STORY

STEEL STRAPPING

34 feet of steel strapping replace 162 feet of 2x4 lumber per car . . . bracing time per carload of ice cream cabinets is reduced more than 66 per cent . . . an employee wins a $1,000.00 savings bond for the idea.—Would a review of a practice of "long standing" unearth a money-saving method in your plant today?

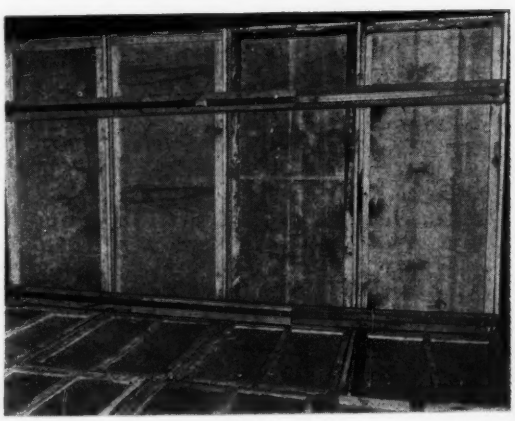
EXAMINE critically an "accepted practice" and there's a possibility you might come up with a new and better way of doing the job. The area of time-honored practices—good enough for Grandfather Time—is notoriously a fertile field for profitable innovations in material handling—from receiving through shipping.

This truism has again been substantiated by Fred Parlett, shipping department checker for the Frigidaire Division, General Motors, Dayton, who investigated a "we always did it this way" method of loading ice cream cabinets in freight cars. Result: He saved the company money by adopting steel strapping instead of wood bracing, and pocketed a substantial award for his alertness.

"There's Always a Better Way"

The huge Frigidaire Plant No. 2 in Dayton is primarily an assembly operation. It ships, every week, trainloads of freezers, beverage coolers, and refrigerators of various kinds. The specific products concerned in this description are the bulkier and heavier ice cream cabinets, home freezers, and beverage coolers. The lighter household cabinets had for years been braced by use of ¾-inch steel strapping. Because of the greater weight of the heavier units, however, it had been accepted as fact that wood bracing was necessary. Well, it wasn't.

The cars are loaded double deck, and the bracing by use of 2" x 4" pieces used to require an average of 162 feet of this lumber per car. Aside from the scarcity and high cost of the wood, this bracing method also required approximately 2½ hours of carpenter work. During the course of a five-day week the plant ships more than 200 carload lots of the various types of freezers and coolers. A considerable proportion of them falls in the classification involved in this article. Thus thousands of board feet of scarce lumber and many hundreds of urgently needed carpenter hours were consumed in bracing. These cost and time factors caused Fred Parlett to reason himself through to this point: as long as the lighter household units are securely braced by use of ¾-inch



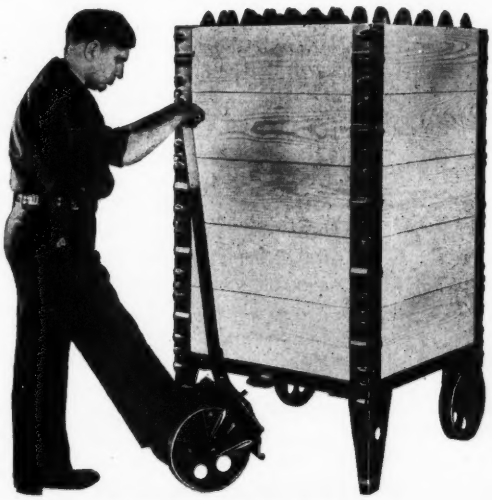
Larger photo, right, shows upper deck completely braced. Suggested application won Parlett $1,000 bond. Extreme right: Fred Parlett demonstrates use of heavier strapping for bulky crates instead of more costly wood bracing.

Photo Courtesy Globe-Union, Inc.

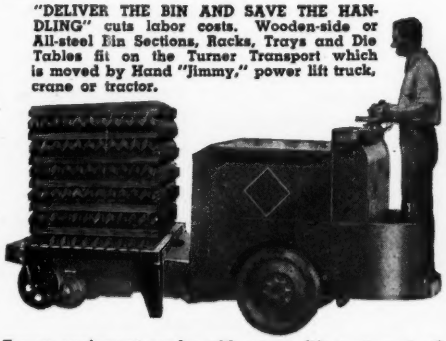
THE TURNER SYSTEM OF MATERIALS HANDLING

Puts Your Plant in ORDER and keeps it that way!

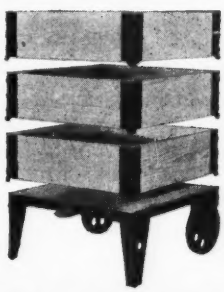
Consider what it would mean to your plant to have everything in perfect order—yet instantly available for transportation to any part of the shop. The TURNER SYSTEM will do that . . . and at the SAME TIME it will SUBSTANTIALLY reduce your costs for Labor, Space and Equipment. It has saved up to 50% for other manufacturers. FIND OUT WHAT IT CAN DO FOR YOU!



"DELIVER THE BIN AND SAVE THE HANDLING" cuts labor costs. Wooden-side or All-steel Bin Sections, Racks, Trays and Die Tables fit on the Turner Transport which is moved by Hand "Jimmy," power lift truck, crane or tractor.



Turner equipment works with power lift truck and all other modern transportation methods.



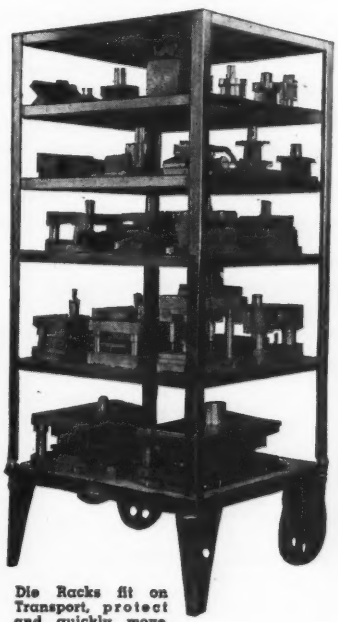
Bin Sections may be removed as load diminishes, added as load increases. ALWAYS THE RIGHT SIZE BIN.

THE TURNER SYSTEM PROVIDES VERTICAL AND HORIZONTAL EXPANSION, PUTS EVERYTHING ON WHEELS.

Get the Facts on THE TURNER SYSTEM

Twenty-four page book sent free to established companies. Write for your copy today.

Write for Details of our 60 DAY FREE TRIAL OFFER

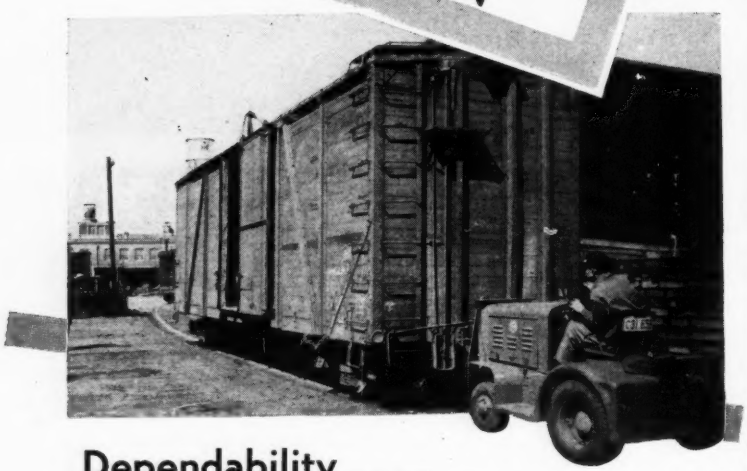


Die Racks fit on Transport, protect and quickly move large and small dies.

FACTORY SERVICE COMPANY

4607 NORTH TWENTY-FIRST STREET **MILWAUKEE 9, WISCONSIN**

STAMINA plus



Dependability . . . .

Make SHOP MULES tops at any job from pushing boxcars to pulling trailer trains.

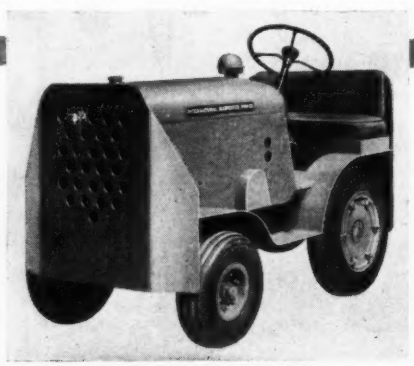
Standardization on International Harvester engines and replacement parts provides interstandardization between SHOP MULE models. Our users know that interchangeability of parts affords economical maintenance and availability of service means quicker repairs.

Large SHOP MULE fleets have been built on the principle of standardization and interstandardization. Many owners operate from five to two hundred and seven SHOP MULES—with as many as forty six under one roof!

HEBARD

SHOP MULE INDUSTRIAL TRACTORS

INTERNATIONAL HARVESTER POWERED



All SHOP MULES are Underwriters Laboratories Approved

Write for the SHOP MULE "Photo Folio" illustrating working views of all models including medium duty A14V shown above.

W. F. HEBARD & CO. • 336 W. 37TH ST. • CHICAGO 9, ILL

CREATORS AND MANUFACTURERS OF SHOP MULES SINCE 1918

steel bands, why not try a heavier type of strapping for the heavier cabinets?

After investigating the subject, he found that 1¼ inch steel bands would be amply adequate. It was during the first part of January 1946 that Parlett mentioned the idea to the head of the shipping department, J. Walton. Parlett recommended that sufficient of the heavier strapping be supplied to brace the upper decks of three experimental cars.

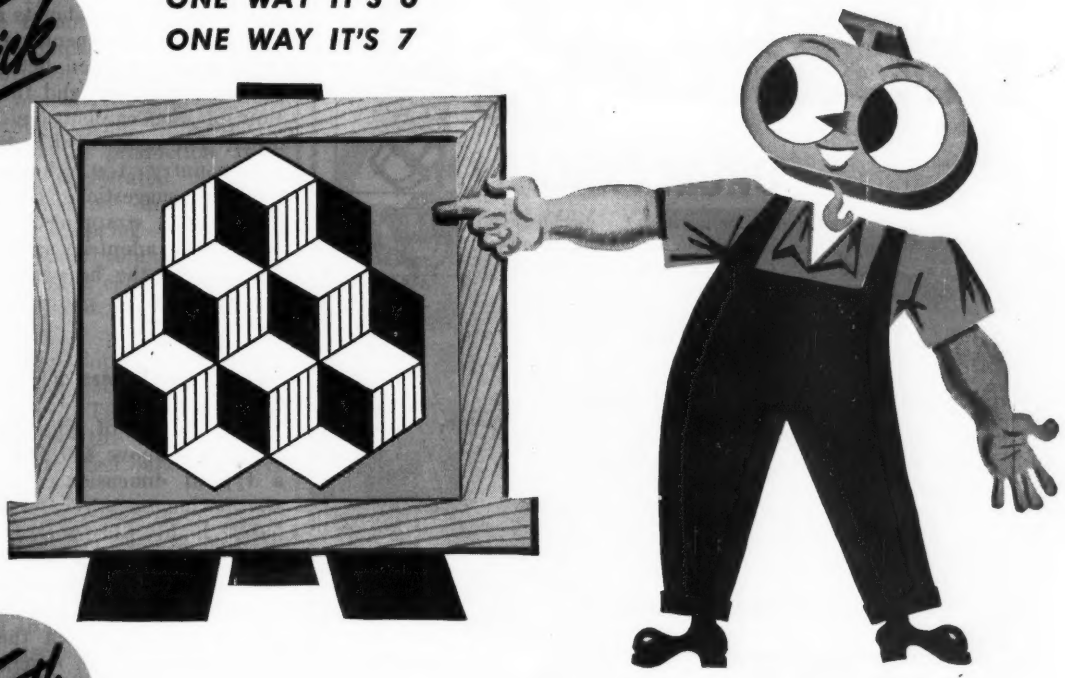
Another point should be mentioned in this connection. This is the Frigidaire Suggestion Plan, its motto: "There's Always a Better Way." The plan offers an incentive to employees in the form of a financial award. But even when the amount of cash is nominal, depending on the nature of the suggestion, the official recognition of "a job well done" likewise serves to stimulate employees to remain alert to better ways of doing things. The reward for any suggestion adopted, incidentally, is based on the cash value of the savings effected by the new method, and hence the specific amount of any award can only be known after exact before-and-after comparisons under operating conditions have been made. The maximum award is a $1,000 U. S. Savings Bond. At any rate, the company's Suggestion Plan serves as a constant reminder to operators that they need not accept time-honored "facts"—and Parlett's idea was handed in through the plan.

Shipping Department Supervisor Walton recognized the possibility of considerable savings in Parlett's idea. But, for the sake of a fair test, the three-car shipment suggested would have to be a rugged one. Hence the shipment chosen was one that was destined clear across the country to a West Coast Frigidaire distributor. The cars were loaded according to the new plan, the upper deck braced with 1¼-inch strapping. Only a minimum of wood bracing is required for the cabinets in the lower deck since they are usually loaded solid one against the other throughout the cars.

In the packing copy accompanying each experimental carlot an addressed postcard was enclosed,

Trick

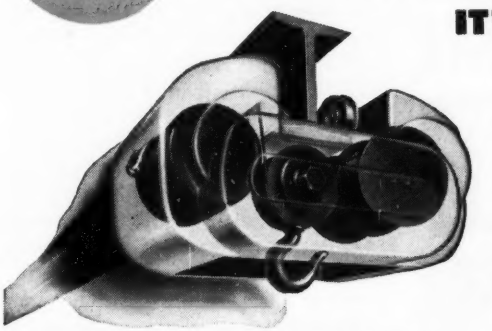
ONE WAY IT'S 6
ONE WAY IT'S 7



Truth

ANY WAY YOU LOOK AT A LO-HED

IT'S SURE-FIRE, LOW-COST LIFTING



LO-HED ELECTRIC HOIST

100% Positive Automatic Stop.
Powerful Automatic Holding and Lowering Brakes for Safety.
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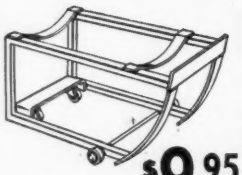

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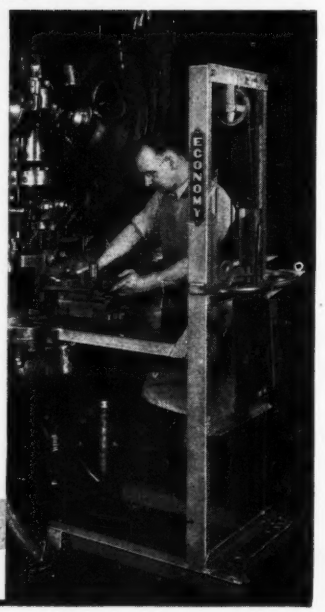

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with the request that the West Coast dealer report on the condition in which the cabinets arrived. The report subsequently received could not have been better. The bracing was intact and the condition of the cabinets in perfect order. The result of this strenuous cross-country test clinched the checker's suggestion. Bracing by use of steel strapping instead of wood was adopted as standard practice for the heavier cabinets, as shown in the photos on these pages.

45 Minutes Instead of 2½ Hours

The weight of the individual cabinets is above 450 pounds, and a typical dimension (crated) is 43½" long, 35½" wide and 38½" high. (The weight of the average lighter household refrigeration cabinets is approximately 140 pounds less per unit.) While there are variances between the larger and smaller of the several types of commercial cabinets, the figures given will suffice as an example of their size and weight. These heavier cabinets are brought from temporary storage at the end of the assembly line (two at a time) by fork lift truck into the cars, where they are loaded in the usual manner.

The 1¼-inch steel strapping (used only for the upper deck, for the reason previously given) is anchored to the walls of the car by use of 1½" x 3½" plates, two lengths on each side, approximately three feet apart. The specific distance is of course adjusted to the height of the crates being loaded. The plates are usually nailed to the car walls about four feet back of the end of the upper tier. Since the loading information tells the checker how far the upper deck on each side will extend into the car, the latter is usually prepared with the steel bands before the loading starts. Approximately 17 feet of strapping are used (for both lengths) on each side, or a total of 34 feet on both sides, as an average.

When the upper deck has been loaded, two-by-four inserts are placed across the load for tensioning purposes, as shown in the photos. After the bands from each side have been stretched and

crimped, the operation is completed. The job requires on an average 45 minutes for the entire car, as compared with the 2½ hours formerly required when wood bracing was used. The time gained stands the company in good stead. For the plant's production today is greatly accelerated, and the manhours saved are urgently needed in shipping the present greater postwar volume. In other words, a loaded car no longer has to wait 2½ hours on the spur before it can be pulled, and thus loading and shipping are better able to keep pace with the production lines. The receiver saves time too, for the handlers need only snip the steel bands to move the loads out.

Usually the crated units, placed side to side, fill the width of a standard car within two or three inches. In a wider car, however, a space of 16 inches may be left free. In that case side bracing is applied to the lower deck—one length of two-by-fours nailed flush against the load.

The strapped upper deck, shown in one of the photos, usually extends to within about three feet of the door on each end. The space left will of course vary somewhat in accordance with the number of units shipped in each car. But if the second layer should extend partially across the doorway, the same bracing procedure is used. The only requirement is (when the upper deck is not loaded solid in the doorway) that approximately 12 inches of space be left between the two top tiers for application of the strapping.

A $1,000.00 Idea

"There is nothing startling or unusual about the suggestion I submitted," said Fred Parlett to a FLOW editor. There is nothing startling about most routine operations, true, but the point is: no one else had thought of the simple change in the everyday practice before Parlett handed it in through the Suggestion Plan.

(Certain phases of the efficient handling practices in connection with the lighter household Frigidaire cabinets are described on page 54.—Ed.)

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Cartons of asphalt tile are lowered from sealing machines (on floor above) to this stock and shipping department on Logan Belt Conveyors. Belts deliver to Logan Roller lines.
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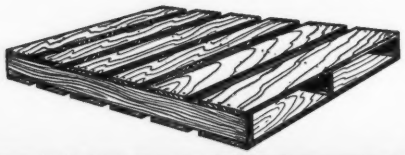
ON THE  PALLET

NEWS · VIEWS · TRENDS

WHEN attempting to mechanize or otherwise improve material handling functions, management should realize the vital need of proper and complete layouts. Often equipment is purchased without adequate layout provisions. It is not uncommon to find a building completed, with no plans made for laying out the feeding of materials and parts to machines, and no consideration given to the location of stock and the facilities for storing and shipping the packaged product. In one instance, where a conveyor installation was planned, there was no space provided for it, and three presses had been installed in three different locations within a few weeks. A qualified material handling engineer could have saved the plant owner all this expense and trouble by laying out properly, in the first place, the production equipment and the material handling apparatus.

Consideration of handling should be part of locating a press, mixer, filling machine or lathe. When a foreman or other plant representative makes such a decision haphazardly or arbitrarily, often weeks are consumed in trying to find some method—an almost superhuman effort—in trying to get material to and from such improperly located equipment. Layout planning for production and handling will avoid such costly mistakes.—*John C. Somers, Manager, Industrial Products Engineering Co., Long Island City.*

* * * *

RECENTLY returned from a five-month trip to the Union of South Africa, Harold von Thaden, vice-president of the Robins Conveyors Division of Hewitt-Robins, Inc., reported fast development in the industry and economy of that country. He took time to study business conditions generally in South Africa, the Rhodesias and other places on the continent. Von Thaden's two dominant impressions can be summarized as follows. The South African business people are distinguished by clarity of thinking and directness of action. The expectation seems justified that South Africa will enter upon an era of development in all phases of commercial, industrial and mining operations. Material handling equipment will help them.

* * * *

MORTIMER A. LOWE, senior partner of Pallet Sales Company, New York City, died suddenly on December 22, 1946. The company will continue to function as previously, under the direction of the surviving partners and with the same staff and personnel. It is also announced that there will be no change in business policies.

* * * *

THE 16th annual AMA Packaging Exposition has been scheduled for April 8 to 11, in Convention Hall, Philadelphia. The AMA Conference on Packaging, Packing and Shipping will be conducted concurrently with the exposition. The exposition will occupy 80,000 square feet, with approximately 150 exhibitors displaying machinery, equipment, supplies, and service. Trade attendance, according to a release, was in excess of 10,000 last year.

* * * *

GORDON J. BERRY, vice-president of The Electric Products Company, Cleveland, Ohio, announces that effective December 1, 1946, The Udylite Corporation of Detroit was appointed a distributor of E. P. electrolytic motor generators. Udylite, with its nationwide organization of sales representatives throughout the industrial centers of the country is in constant contact with all elements of the plating and finishing industry.

* * * *

IN ORDER to provide needed additional floor space for both factory and office, the Revolvator Company, manufacturers of material handling equipment, recently completed construction of a new office building at its plant in North Bergen, New Jersey. Former office space in the factory building will be utilized to provide increased manufacturing facilities for which new machinery has recently been purchased.

* * * *

ALTHOUGH imports of natural crude rubber showed a consistently steady increase during 1946, plants turning out American rubbers had to produce an estimated total of 740,000 long tons last year to enable the rubber industry, both here and in many other countries, to cope with the tremendous backlog of demand for products of all types. It is estimated that production of 450,000 long tons in 1947 will be needed so the rubber industry's contributions to reconversion will not be impeded.

* * * *

BEFORE the last 1946 meeting of Railway Freight Agents in Chicago, Earl E. Thulin, railroad representative, Materials Handling Division, The Yale & Towne Mfg. Co., offered concrete help to railroaders who wish to relieve the alarming shortage of freight cars. No major easing of the freight car shortage is in sight for two years, and currently, the railroads reportedly still lack 20,000 cars, whereas a surplus of at least 50,000 is required for smooth functioning of our national rail system. This, coupled with the fact that more than 5½ million cars of merchandise freight are carried annually, accounts for the heavier loading, faster loading, and faster unloading which is a clear trend in freight handling today.

"Machinery for handling shipments by mechanical means, and the flow-systems used at terminals and transfer stations, are but two factors of the prob-

(Turn to page 69)

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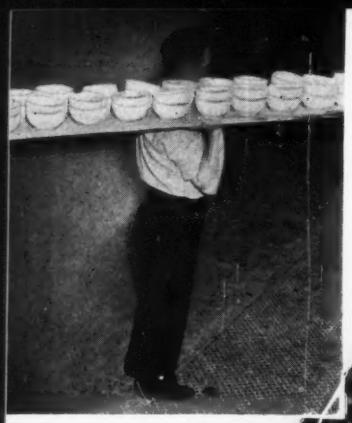
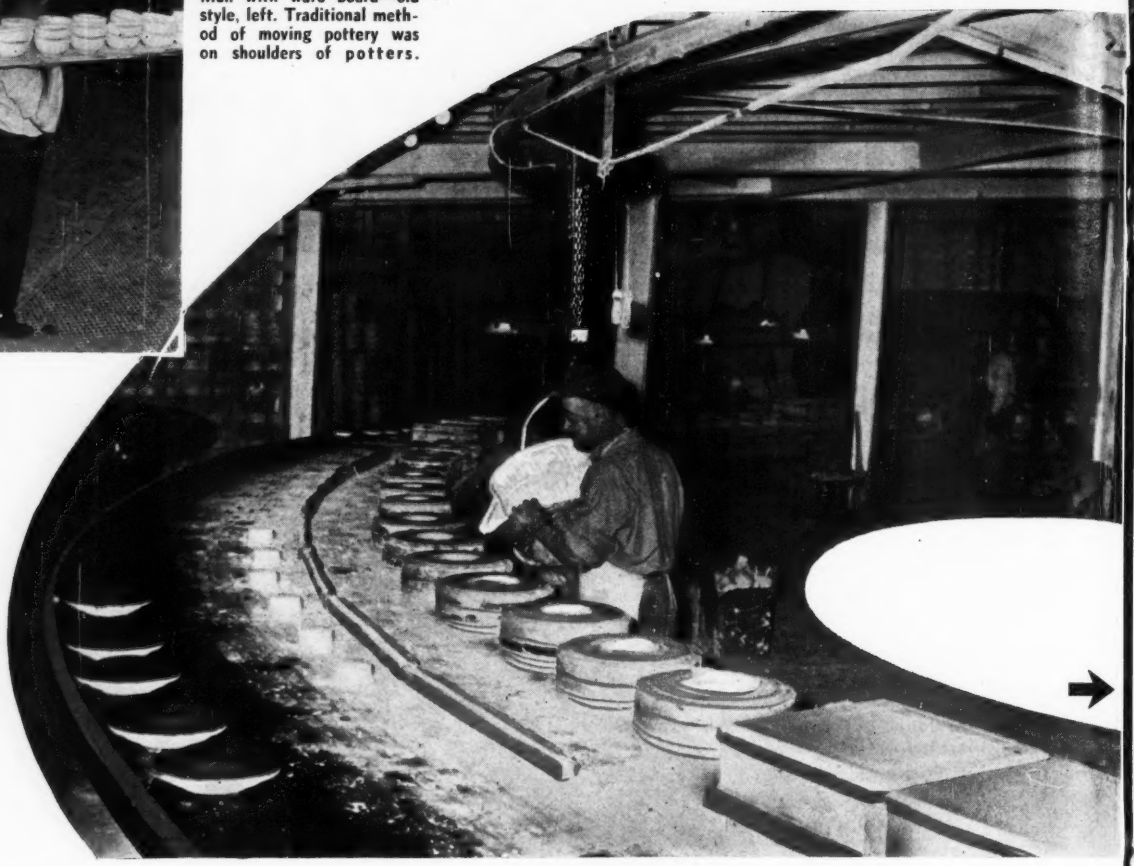


Man with ware board—old style, left. Traditional method of moving pottery was on shoulders of potters.



Modern pottery handling pays b

These kilns operate AT

In contrast to photo at upper left, this is the new style. Molds on conveyor shelf travel up to drying zone from main automatic jigger. Load-bearing operators are no longer required.

FUTURE generations of potters will have two straight shoulders because of developments at the Scio-Ohio Pottery Company. They will be without the occupational deformity of one shoulder as much as two inches lower than the other, developed from the traditional practice of carrying the pottery-laden ware boards from station to station. (The practice is still prevalent elsewhere in the industry.) They will be able to thank the Scio, Ohio, Pottery Company's President Lew P. Reese whose efforts at his own plant have relegated the ware board to the trash pile of outmoded practices. Here, all carrying and lifting is done by mechanical means. As a result the company's potters are turning out

Traveling dies on revolving table in mold shop. Note batch bucket suspended from hoist. Article explains the revolutionary principle of this innovation.

Many a lagging business, awry from the traditional burden of yesteryear's inefficiencies, can take heart from the example of this pottery company. Working up from an incredibly modest beginning within the last 14 years, it tossed aside the dead weight of tradition to become America's most mechanized plant in its field. And one of the most successful.

prodigious quantities of ware. The plant has a national reputation as leader in technological innovations in the ceramic field.

Several basic factors determine and color the over-all operational pattern. The plant operates on a continuous 24-hour schedule throughout the year. The company specializes in the production of an inexpensive line of plain white dinnerware, of which more will be said later. No one basks in the sunshine of yesterday's achievements. Everywhere about the plant is noticeable an atmosphere of planning and experimentation for further advances and improvements. Some of these involve processing and so are beyond the scope of this article; others concern changes in layout and material handling and will be indicated in their proper places.

ys a bonus.

AT CAPACITY

Bulk and Bag Handling

The main receiving operation involves clays and other bulk materials shipped loose in box cars. Plaster of Paris, required in mold making, is received in 100-pound paper sacks.

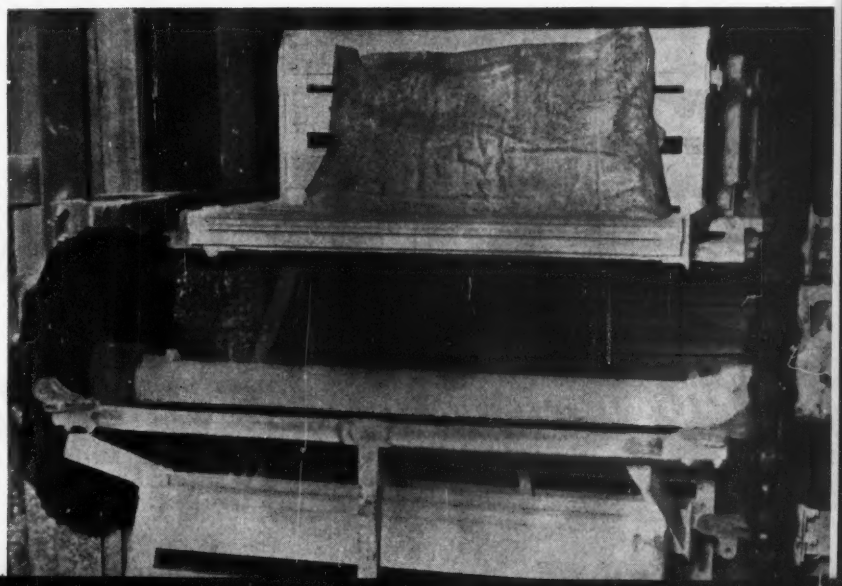
The loose bulk raw materials, ranging from very fine powder to lumpy aggregate, arrive on a spur at the west side of the plant. The cars are spotted alongside a receiving chute which feeds to a bucket elevator. The chute is hinged at the bottom to the conveyor housing and when the upper end is lowered on the car floor its steel plate extension makes a patform on which the powered scoop truck can run to discharge its load. This truck has a scoop of 10 cu. ft. capacity, and an average carlot of 40 to 50 tons is usually unloaded in about 1½ hours.

The following before-and-after comparison is of interest. Previously the cars were unloaded by use of shovels and wheelbarrows. The unloading time with this manual method was approximately 4½ hours per car, with six men, as against the scoop truck operator doing the job by himself.

The present operation is highly satisfactory from an efficiency and economy angle but, like so much else in this progressive plant, it is not the method that will be used tomorrow. New methods are being considered for unloading the increasing amounts of clay, silica and other loose bulk materials. The management is considering both a negative blower system and use of gravity flow in conjunction with drop-bottom gondolas and receiving pits below track level. Either one or a combination of the two may be finally adopted, after a thorough investigation establishes the most advantageous procedure from the standpoint of operator safety and efficiency.

From the material receiving hopper the bucket elevator carries the aggregate 20 feet to the top of the building and discharges into a scraper conveyor. The trough of the latter, about 85 feet long, is installed over a series of storage bins and the incoming material is discharged in the proper location by use of trap doors. Each storage bin, located in the slip house, is about 75 feet deep and the material dropping through the discharge gate must of course be evenly distributed over the oblong space. This is accomplished by means of a flight conveyor which is installed close to the ceiling in each bin. The reversible line carries the arriving material either forward or to the

Cradle-type conveyor, traveling horizontally, delivers plaster of Paris sacks to storage. The materials is thus moved directly from incoming freight cars.

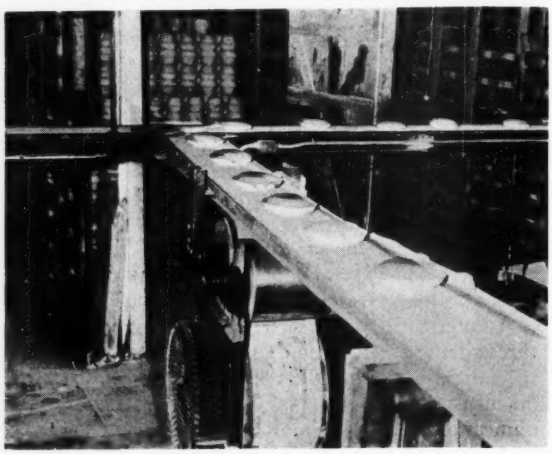


rear as desired. The raw material for the dinnerware is thus delivered entirely by mechanical means from the cars to the storage bins, located only a few feet across an aisle from the mixing operation.

While the handling of the plaster of Paris is a subject that properly belongs with the discussion of mold handling, it is here described as part of the over-all receiving operation. The carlots of bagged plaster are spotted alongside a vertical conveyor which runs (in a housing) conveniently within reach of the car door. Spaced on 48-inch centers are chain-mounted L-shaped cradle-type carriers with the projecting part of the "L" supported by a brace. The individual bags are placed diagonally (on edge) into the angle of the "L". The conveyor travels horizontally on the upper floor level, and the bags thus remain in their original position without shifting, which would cause damage to the paper containers.

On the upper level this line runs horizontally for a distance of about 125 feet. At the end point the bags are placed on 4-wheel flat trucks and moved to the nearby stockpiles. Approximately one bag

These flatware strippers route pieces via monorail conveyor carriers, foreground, to finishing.



These molds travel from drying bins to main automatic jigger line, to replace worn molds.

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is taken off the line every 10 seconds, and an 800-bag car is unloaded in about 2½ hours, including car preparation time.

Previously, handling equipment was run into the cars and the individual loads had to be hauled a distance of about 1,000 feet to storage. Under these conditions the unloading of one car required eight hours and more men than at present. Thus the conveyor handling permitted utilization of an out-of-the-way area on the upper floor, which is immediately above the mold shop, the point of use. The haul from the end of the conveyor to the present stockpiles is only about 35 feet, or less. And with the second-floor storage area utilized, it is now possible to feed the plaster of Paris via chute directly to the mixing station in the mold shop below. Thus the adoption of conveyor handling permitted advantageous relocation of the stockroom, and this in turn resulted in reduced man-travel and reduced physical effort.

A thoroughgoing revamping of present handling procedures is also under way in the glaze department. According to present plans, the use of the gravity flow principle will supplant to a large extent the method adopted several years ago.

Thus a constant and speedy flow of raw materials is assured. And this is of course a matter of prime importance in a plant operating continuously 24 hours a day seven days a week and 365 days a year.

Making the Clay

As previously indicated, the raw material storage bins are located in the slip house across an aisle from the blungers or slip mills, a completely enclosed operation. From the stockpiles the various ingredients for the individual batches are shoveled into a 1½ yd. capacity drop bottom batch scale, which is mounted on pneumatic tires for easy rolling. The load is spotted over the floor-level hatch of the slip mill and a lift on the handle bar releases the charge.

The next several operations are entirely by gravity and pressure flow and are briefly indicated. The mixed material emerges via a discharge trough into the rough agitator, a temporary storage tank where the clay solution is kept in suspension by revolving paddles. Next in line are a series of horizontal rotating screens, a magnetic separator (to remove iron often contaminating clay), the smooth agitator, and thence the mass is transported by compressed air to the filter presses. In the latter, a large percentage of the water is removed in a series of treated canvas bags or sheets, formed by interlocking metal rings. The clay particles adhere to the fabric. Upon completion of the filtering cycle, the rings are unlocked, the two halves of the canvas bag pulled apart, and the circular "leaf" of clay (about 50 pounds) is dropped onto a 4-wheel flat truck measuring approximately 72" x 24". The clay is at this point of the consistency of firm putty and it is the substance of the "burned stuff" (ceramic product) that will be shaped into 12 different items of dinnerware. After a turn in the pug mill the mass emerges from

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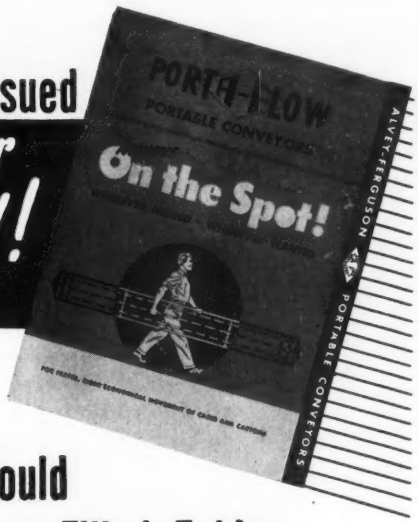

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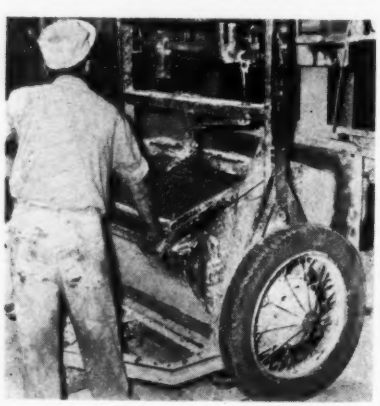
the extruder on a rubberized belt line in rolls about three inches in diameter and in lengths suitable for feeding into the automatic jigger. This is the forming machine in which the circular lumps of clay are mechanically shaped and thence conveyed through numerous processing steps.

A Sound Theory

Before following the movement on this interesting conveyor, it may be well to consider briefly the central points of the material handling and business philosophy that actually brought it into being. Standardization on one line of plain white dinnerware, mentioned earlier, is a cardinal point of the business. When L. P. Reese started building his business on the ruins of an abandoned old pottery plant that had died in bankruptcy, he



This is a pneumatic-tired batch scale spotted over a hatch and ready to charge slip mill.

had several convictions derived from a practical working knowledge of long standing in the field. One was that the pottery industry in general was encumbered by backward methods, with excess handling as one of the worst drawbacks. The ware board is the symbol of this antiquated method. Reese envisioned for the pottery industry the same mass production line methods that had been so successfully applied to metal fabricating processes. This, in turn, meant standardization on a uniform, inexpensive product minus frills and decorations. Over a period of time he consistently simplified his line, early giving up the more complicated shapes of decorative figurines, until the plant was 100 per cent standardized on plain white dinnerware. Sold in department and chain stores, it is a mass-produced item for the mass of the people who want serviceable ware at modest cost. The step-by-step realization of this vision came about in less than 15 years. From a plant that started with seven employees willing to wait for their wages, the Scio-Ohio Pottery Company has grown to one employing more than 800. Reese's idea of mechanized mass production by use of modern handling methods has paid off in a very substantial way, while other plants in the same field could not see beyond the ware board. The Scio-Ohio Pottery Company gained national prominence within recent weeks when Lew Reese distributed over $700,000 in Christmas bonuses to his workers this past Christmas. This is the barest outline of a present-day chronicle of an American industrial plant in which modern material handling played a leading role.

87,000,000 Pieces

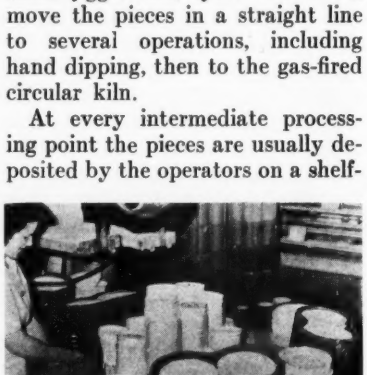
In light of the foregoing, the annual production in the neighborhood of 125,000,000 pieces is almost something to be expected. One 12-line and three one-line automatic jiggers produce the ware, with the main jigger accounting for approximately 87,000,000 pieces by itself. It is believed to be the largest machine of its kind in the world. Each production unit is served by its own continuous conveyor system.

Let us follow the flow on the main 12-line automatic jigger which is illustrative of the others though on an enlarged scale. Synchronized with the jigger or molding machine, the conveyor advances the chain-mounted and mold-bearing shelf beneath the wire cutters, and 12 pellets of clay drop into as many molds. The continuously moving conveyor then positions the filled molds under heated dies which roughly press the shape of the ware—plates, cups, bowls, etc. The next momentary stop for the rough-pressed green product is under the jigger tools or spinning heads, which form the outside of the flatware and the inside of the holloware pieces. (The excess clay cut off is deposited on a narrow rubberized belt which carries the material to an agitator, whence it is pumped back into the slip house.) On the 2,854 shelves of the system a total of 34,248 molds is thus constantly kept on the move.

The mold-bearing shelves are spaced on 18-inch centers and approximately 15 shelves pass through the jigger per minute, starting 15 dozen pieces of ware through production in that time. The one-line jiggers, by the way, produce single items, such as cups, or seasonal ware such as oyster bowls.

Immediately beyond the main jigger the conveyor moves straight up to an overhead drying zone. In this 150-foot-long zone the green ware moves up and down through a series of closely spaced loops, then dips to working level (two drops with four stations) at the holloware finishing station. Here operators remove certain items of holloware, now "leather hard", from the traveling shelves. (The flatware continues on the line upward through another drying zone.) The holloware is smoothed, then placed on narrow belt lines traveling at right angles to the main jigger conveyor. The belts move the pieces in a straight line to several operations, including hand dipping, then to the gas-fired circular kiln.

At every intermediate processing point the pieces are usually deposited by the operators on a shelf-



Sagger pinning table: loaded saggers are removed opposite girl, placed on kiln platform.

type vertical conveyor, which carries the product through an overhead drying zone and then descends at the next station in line. The use of overhead space between such processing stations is typical of the layout throughout. It permits closely spaced work stations, with no floor area needed for temporary storage of work in process. As soon as an operation is completed, the piece is on its way

and out of the way. And the constantly ascending and descending shelves maintain a continual flow of material between all stations.

Try to imagine, for the sake of contrast, potters with ware boards on their shoulders moving through the confined spaces. Such a speculation brings home how much less productive the same amount of square footage would be, particularly with drying zones located in the one-floor area. It should be noted that the entire upper level of this section of the building is a housing for the outgoing and returning conveyor lines, including the drying zones.

As the fired holloware emerges from the kiln the pieces are placed on another shelf type conveyor, which carries them to inspection, dressing and packing in an adjoining building.

"Keep the kilns going at capacity"—that's the rule. And the continuous conveyor flow makes this possible besides providing maximum utilization of every productive area.

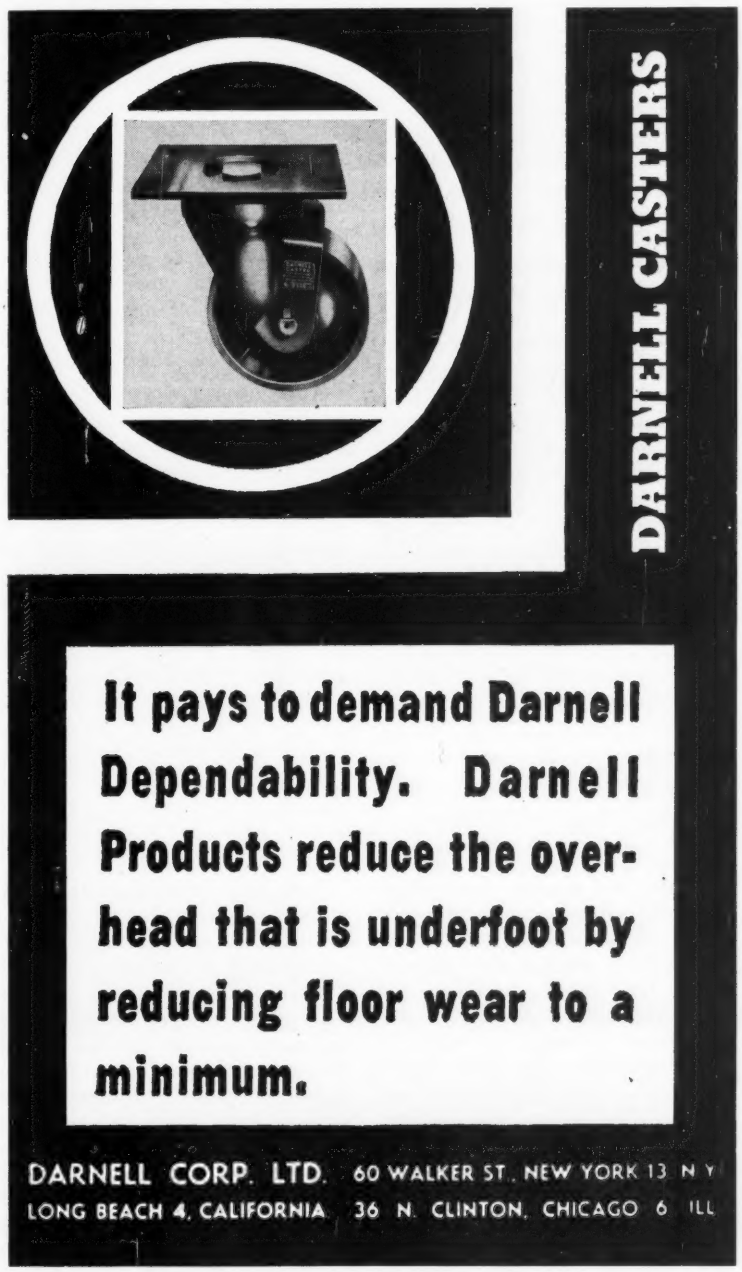
About 150 feet beyond the holloware finishing station there are two more dips in the main jigger line, and here strippers remove the flatware pieces at four work stations. The stacks of dried ware are deposited on double-tray carriers suspended from an overhead chain conveyor which circulates through this area. The tray carriers move the pieces (through confined spaces) to the finishers, who again dispose of the items on a shelf type conveyor. This line moves straight up, then through a covered trestle to the adjoining building where the product is delivered to the bisque kiln. Again, the flow of materials between successive departments is smoothly maintained by means of shelf conveyors—to glazing, drying, gloss kiln,, dressing, inspection, packing.

Scrap removal is an important part of the operation, particularly since the pieces are subjected to rigid inspection at the various stations. But aisleways are narrow and hence on-the-floor type scrap collecting devices would be cumbersome. To overcome this, 1½ yd. capacity drop bottom scrap buckets are suspended from I-beam trackage at such stations as hollow ware finishing and flatware stripping. Practically suspended at the operators' elbows, these buckets serve as convenient receptacles for any rejects and are also conveniently moved about the plant.

The tremendous number of pieces flowing through the flatware glazing department are mechanically sprayed in two adjoining booths. In one the lower and in the other the upper surfaces of the pieces are sprayed. The glaze dipping machines are two wheels (one 36 feet and the other 20 feet in diameter) whose carrying surface consists of five parallel piano wire strands. On these, the flatware is carried through the spray booths at a rate of approximately 240 feet per minute.

The circular sagger pinning tables might also be mentioned in this connection as an item of special interest. These revolving tables are positioned a step or two from the gloss kiln. As the operator fills each sagger (a refractory container, open top and bottom, in which the plates are suspended

(Turn to page 66)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It pays to demand Darnell Dependability. Darnell Products reduce the overhead that is underfoot by reducing floor wear to a minimum.
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(Continued from page 31)

that long, odd-shaped carton turn the corners and travel down the center of the belt.

In closing, I wish to leave this one thought: The conveyor system is always *there* on Monday morning without a hangover. With a sound preventative maintenance program, it will serve well.

MAIL ORDER HANDLING

By GARNER HERRING
Director of Mail Operations, Aldens, Inc.

IN OUR business, retail mail order distribution, high volume at low markup is our life's blood. We must, to maintain and increase our sphere in the economic picture, reduce the spread between the manufactured cost and the delivered retail price.

We recognize the material handling cost as a tremendous contributing factor in this spread. We estimate in excess of $500,000 a year is spent in payroll alone for internal material handling in our plants. This does not include freight costs to our doors, or delivery costs via the mails to the customer.

In the early days of the mail order industry, orders were filled by taking the original order to the different stock bins and picking each item of merchandise ordered and placing them in a basket to be transported to the packing rooms. As the number of stock items increased into thousands, and the orders to be filled ran into millions, this method broke down. It was necessary to create an entirely new system, which was developed.

The then new system called for creating a ticket for each item on the order, and placing a time schedule for assembly destination on each ticket of the original order. The tickets were dispatched to the different departments for filling and the original order to the packing department to await the arrival of the filled tickets. The filled tickets, from the separate departments met with the original order at the predetermined time and location in the packing department where they were matched for the final packing and shipping operation.

All the large mail order companies use this order handling system today, differing only in some specific details that have been developed and found best fitted for their particular operations.

To assemble and ship about 42,000,000 pounds of merchandise, with the minimum amount of handling, we have laid out our packing and shipping department on the second floor of the eight-story building that we occupy. The departments in which the merchandise is stocked are located on the floors above.

At the start of each week day, we decide how many orders we are going to handle. These orders are then released to the merchandise departments for handling in ten-minute intervals throughout the entire day, the same number of orders every ten minutes. So on days when we are handling 50,000 orders, 1,000 orders are released for handling every ten minutes, and the 4,000 items that make up these 1,000 orders are received every ten minutes in the packing department for assembly. The exact same orders that were released to the merchandise departments stay together and are assembled at the same time in the packing department.

It is very difficult to orally explain our system, but one thing I can tell you is, it works. We have not been off schedule, as we call it, in the last twenty years of operation. All the operations mentioned are made possible by the use of conveyors and gravity chutes. The 42,000,000 pounds of merchandise shipped are transported by these conveyors and chutes so that there is practically no manual material handling involved. This, we believe, accounts for the low handling cost that makes it possible to successfully compete with retailers that are located in the immediate local areas that our customers trade in.

C. M. White, President, Republic Steel Corp., giving main address. See below.

INDUSTRY'S HIDDEN COSTS

By C. M. WHITE
President, Republic Steel Corporation

TO most of us material handling in the plant is a necessary but costly and laborious job. We forget that much of our total manufacturing procedure is based on material handling. Each progressive step from machine to machine or from department to department involves a problem of material handling. But we don't pay any freight bills for this interior handling, so too often we have no idea what it costs. It remains a hidden charge against total manufacturing costs, about which we have little information.

It is because of this fact that I welcome this organized effort being made here in Cleveland to expand and dramatize this important, complex subject. You who have sponsored this great Exposition in Cleveland are pointing the way into relatively little known fields of economy and efficiency. As a result of your efforts, American industry should find ways to save millions of dollars annually, not only in labor but in the reduction of damaged shipments and inefficient methods.

Personally, material handling has been a hobby of mine for many years. I've made more than a casual study of the subject as it applies to the steel industry. While I can't speak to you as an expert, I can talk as one who has spent many hours with experts—and in personal observation—trying to reduce the hidden cost of material handling.

I've been in many plants where

cranes were used to move two-ton lifts which should have been moved in 5-ton units. On the surface the increased cost of moving 2-ton instead of 5-ton units was not, perhaps, readily discernible.

But we know that it is a waste of money to have inadequate equipment. Let me give you a few figures.

During a given month a check was made on the movement of 800 orders within the plant. These orders totaled approximately a quarter of a million tons. Thirty-seven per cent of the orders, or nearly 100,000 tons, did not conform to standard packaging practice. Would you believe that it cost from 21c to $3.40, or an average of 54c per ton more, to prepare and handle these non-standard packages? The total loss amounted to slightly over $50,000 for one month alone.

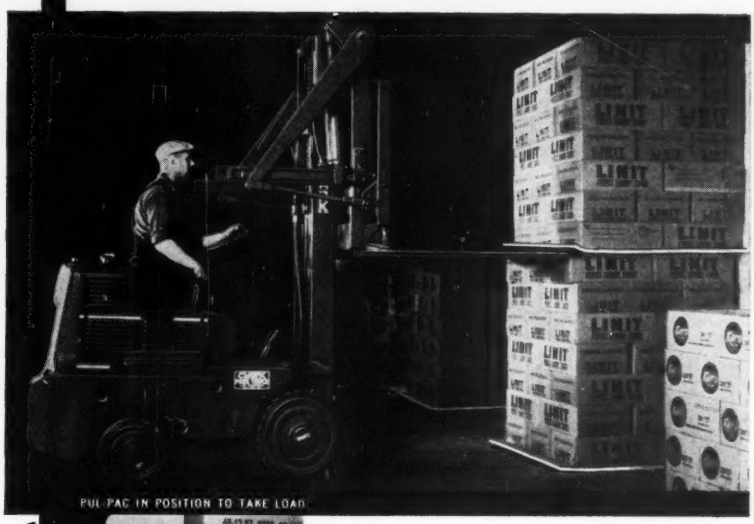
Let's take a second example. I know of another study of material handling methods and equipment. This showed that costs in shipping and material handling had been reduced nearly 32% as compared with 20 years ago. This was in spite of the fact that labor rates had risen from 44c per hour to 96½c per hour, or 119%.

This company, with efficient material handling equipment, made a saving of nearly 32%—a saving not to be laughed at.

The basis of efficient material handling is standard packages. With standards set, appropriate equipment can be installed with full knowledge that it will be used advantageously and efficiently. Lost motion, wasted effort and time will be largely eliminated.

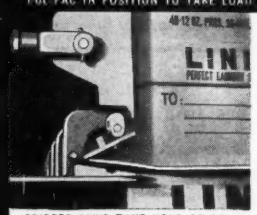
You may think standard packaging will not pay its own way, but let me give you an example from the steel business. Let's take a 5-ton standard lift of 16 gauge 36 x 96 sheets. Now let's reduce that standard size to four tons, or three tons, or two tons, or a half ton. The man hours required to package that steel are just about the same whether it's 1000 pounds or five tons. It's the same size so the material used to cover the top and the bottom is the same—the same number of skids and bands are needed; the same handling equipment is required. The only possible difference is the covering material used on the side of the package.

"SENSATIONAL!" was the word . . .

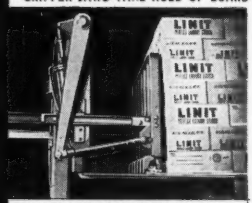


PUL PAC IN POSITION TO TAKE LOAD

1

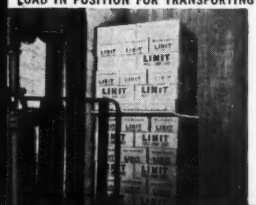


2 GRIPPER JAWS TAKE HOLD OF BOARD



3 PULLING THE LOAD ONTO CARRIER PLATE

4 LOAD IN POSITION FOR TRANSPORTING



5 LOAD IN FREIGHT CAR FOR SHIPMENT

. . . used by Top-Management men to describe the new "PUL-PAC" method introduced at the National Material Handling Exposition by CLARK TRUCTRACTOR.

Why? . . BECAUSE IT . .

- √ employs an inexpensive load base of paper, fiberboard or similar material
- √ makes possible maximum utilization of storage space
- √ reduces shipping costs
- √ handles assembled units on original load base through the entire movement cycle
- √ There are many other reasons — just write

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Prices on CLARK products will not be advanced in excess of increased costs.

ORDER MONDAY—GET FRIDAY

1000 LB. CAPACITY

New Dual Wheel Truck

Model 88R Shown. Same Truck Without Strap $29.75

Rolls Easier

For Appliances and other big loads

This new dual wheel truck rolls easy as a baby buggy, and the man who operates it won't be nearly as tired at the end of the day. The four 8" rubber wheels give a firm base, make heavy objects easier to load, easier to roll, easier to handle. Unusually resilient, durable. Chrysler Oilite bearings. Tube steel frames. Ht.: 54"; 24" nose. TRY AT OUR RISK. Return express collect if it doesn't fit your needs. Order Monday — get Friday from

$31.95

HANDEES COMPANY

Dept. F-3C Bloomington, Ill.

Tube Steel

BAG & BOX TRUCK

ORDER MONDAY GET FRIDAY $16.95

Model 44T. Immediate delivery. Handees new dual wheel idea makes this truck easy rolling, easy to "break-over" the load. Less side-wrench with 4 wheels. Four 5" rubber wheels. Ht. 45"; nose 14"x9". Tapered frame. Wheel guards. Curved cross pieces. Tube steel frame. 600 lb. cap. Over 10,000 Handees trucks sold by mail. Return express collect if not satisfied. Order from

HANDEES CO.

Dept. F-3C Bloomington, Ill.

ORDER MONDAY—GET IT FRIDAY!

HANDEE Model 50R Truck with extra wide nose and 13 ft. web strap, for use as

REFRIGERATOR

and Appliance

TRUCK $19.95

Rubber Tires; 600 lb. Cap.; Height 44"; 5 x 2" wheels; 1" tube steel frame; roller bearings; easy rolling. For medium size appliances and refrigerators and for all general purposes. Not padded. Shipped same day order received. Return express collect if not highly useful to you. 10 days. Order from

HANDEES CO., Dept. F-3C Bloomington, Illinois

TRUCK

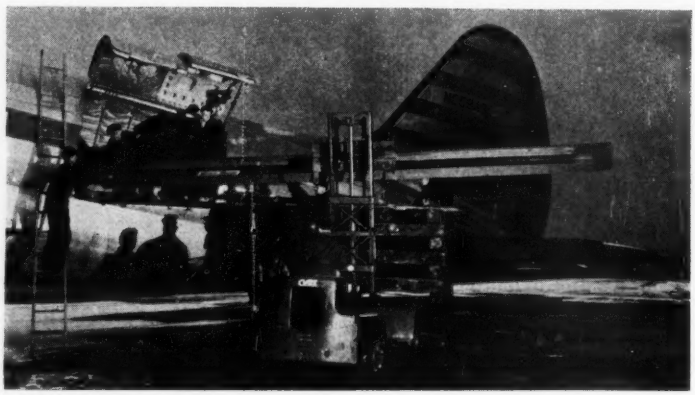
$9.95 F.O.B. $14.95

IMMEDIATE DELIVERY

$14.95

Order Monday—get Friday! MODEL 35: one handle; 400 lb. cap; Ht. 43"; width 16"; 5 x 1" rubber whs. Oilite bearings. Shipped from stock. A good small truck. For a bigger, all-purpose truck—MODEL 50—2 handles; 600 lb. cap Ht. 48"; 14 x 7" hose. rugged 5 x 2" rubber whls, Oilite brgs. Over 10,000 HANDEES trucks sold by mail on our simple guarantee: Return collect if not pleased. Clip this. Order from HANDEES CO., Dept. F-3C, Bloomington, Ill.

10-Ton Crane By Air



Making one of the more unusual air-freight shipments since the end of the war, the Industrial Division of H. D. Conkey & Company, Mendota, Illinois, recently shipped a 10-ton, 37-foot span, double girder overhead traveling crane by Slick Airways from Chicago to Standard Oil of California. The huge crane was shipped in two sections, one section to a plane. Here workmen, with the aid of a high-lift fork truck, load one section aboard a plane at Chicago's Municipal Airport.

But look at the cost. The cost increases from 30% to 750%, according to the decrease in weight.

These figures show rather definitely that any industry may find it of real value to make a thoroughgoing study of packaging and its relationship to material handling.

Not only will the seller benefit because he will be able to standardize his packaging, but the buyer will benefit because he can more efficiently warehouse and store his incoming materials. And both will benefit because their material handling equipment can be designed to definite specifications rather than being too big or too little to function economically.

Now, perhaps you may say that an industry would find it exceedingly difficult to standardize on packages. Of course it's difficult. Almost anything that's worthwhile is difficult, but it can be done.

Again, I know it can be done, because the steel industry has done it.

Several years ago the possibility of war brought out clearly the need of standardization in many lines. The military procurement services of the government had varied specifications for material and widely differing methods of handling their materials. The industrial users in our country had almost individual patterns to follow in their affairs. Over a thousand compositions of steel were being made and the methods of packaging, loading, inspecting and using were so confusing that to step up production seemed doomed to failure simply because no two jobs were the same. The committee responsible for stepping up production had the job of equalizing the steel production of all the rest of the world. They actually exceeded by millions of tons the combined production of all our allies and our enemies. Steels whose tonnage was significant were listed and selected. This list was agreed to by users in industry, and a few steels added for military reasons. Less than one-fifth of the list that had been used was all that proved necessary, and the standard steel list became so usable that now, in time of peace, our users find it better to stick to the widely used steels for reasons of production, inventory, and know-how in obtaining results.

With this experience a committee was set up within the steel industry to study packaging, marking and loading problems. A thoroughgoing survey was made of methods used in material handling, packaging, marking and loading of steel products.

Finally, the committee prepared manuals describing those methods which were considered most suitable for the various steel products.

These manuals have been useful not only to producers but to consumers, to warehouses, to ship-

pers, to freight handlers, railroads and many others.

Material handling, handling facilities and standardization are vital factors in any business, regardless of size. The proper placement of equipment, or machinery, the location of stock rooms, of receiving and shipping departments, will effect economies in handling of work in process.

That large savings can be made is indicated by the fact that from 10% to 40% of the total manufacturing costs represents handling cost. Labor costs have been mounting upward steadily. Mechanical handling is the answer. Good equipment, good planning, good packing is not a luxury. It is a necessity. You men are the shock troops who must carry this message to American industry. You know the answers to the problems which confront us.

We may not recognize your answers immediately but consistent education and never-ending selling should accomplish the result. By doing a constructive, planned and consistent piece of work, you will be performing a real service not only to industry, but to our economy as a whole. You have a great opportunity and I know you will make the most of it.

RESEARCH IN MATERIAL HANDLING

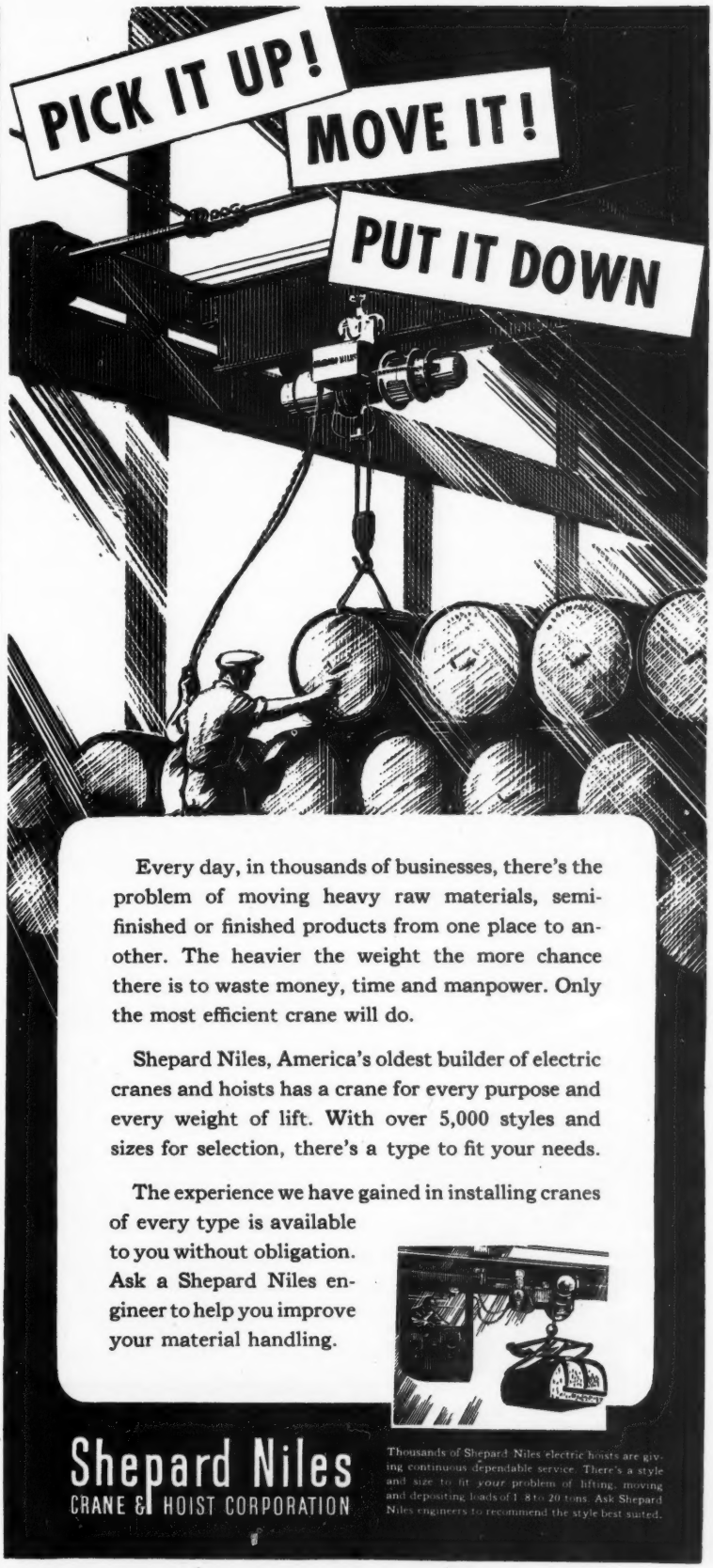
By R. F. WEBER

In Charge of Research for Material Handling and Product Protection, International Harvester Co., Chicago

A FEW words about the Manufacturing Research Department of the International Harvester Company, which has pioneered in material handling research. On March 6, 1944, Mr. Fowler McCormick, Chairman of the Board, in announcing this department in our company, charged it with the following general tasks:

1. To study and conduct research concerning technical manufacturing activities of all kinds. To assure Harvester that it is in close touch with technical progress and all developments which flow from the efforts of scientists, engineers, and practical factory men in this country and throughout the world.

2. To formulate standards of


PICK IT UP!
MOVE IT!
PUT IT DOWN
Every day, in thousands of businesses, there's the problem of moving heavy raw materials, semi-finished or finished products from one place to another. The heavier the weight the more chance there is to waste money, time and manpower. Only the most efficient crane will do.
Shepard Niles, America's oldest builder of electric cranes and hoists has a crane for every purpose and every weight of lift. With over 5,000 styles and sizes for selection, there's a type to fit your needs.
The experience we have gained in installing cranes of every type is available to you without obligation. Ask a Shepard Niles engineer to help you improve your material handling.
Shepard Niles
CRANE & HOIST CORPORATION
Thousands of Shepard Niles electric hoists are giving continuous dependable service. There's a style and size to fit your problem of lifting, moving and depositing loads of 1/8 to 20 tons. Ask Shepard Niles engineers to recommend the style best suited.
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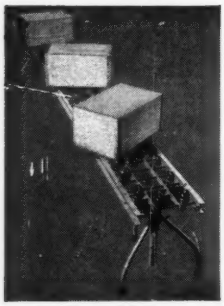
Cost Less to Buy ● Cost Less to Use



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manufacturing practices to be followed by the various divisional manufacturing departments.

3. Conduct training activities concerned with manufacturing.

4. To conduct manufacturing operations research directed toward continual study and improvement of the organization and management of Harvester Manufacturing activities.

One of the sections of this department is devoted to research in materials handling and product protection.

The Manufacturing Research Department will conduct research in many phases of material handling and product protection which will have a general impact on all manufacturing works. It will study substitutions for various types of containers; skid redesign to save material and man-hours; reduction of blocking in loading methods; less expensive corrosion prevention methods; palletization to reduce materials handling costs; material handling equipment; parts depot material handling; special cars and trucks for economy in shipping; improved identification and marking systems; salvage and reuse of materials; economical layouts for packing departments.

Its long-range objectives include reduction of product protection cost; reduction of loading and shipping costs; reduction of material handling cost; increased mechanization of material handling methods; and furthering the sales appeal of packaged parts.

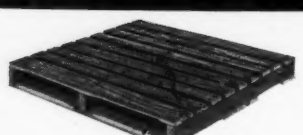
Ideas originated by the research group and backed by laboratory study will go to an advisory committee for review where they may receive the benefit of overall Company viewpoint.

The material handling section of the manufacturing research department has 10,000 square feet in the laboratory in which to further its investigations. A staff of technicians will work on material handling, product protection and related problems of loading and packing. Projects will be assigned to the material handling section of investigation. For example, the manufacturing research material handling section may be required to analyze all existing intra-plant trucking to ascertain the best method and equipment to be used in each plant. The section might be required to analyze all types of pallets available on the market and those being used in various Harvester plants, to find out if each plant is using the best and most economical type of pallet for its particular operation.

Sufficient laboratory machinery is available in our new material handling laboratory to begin making initial tests. However, some of the testing equipment, procedures, and methods required to make accurate determinations for specific material handling and product protection projects have not yet been decided upon. We are coordinating this work with other similar laboratories and equipment manufacturers to have access to the very latest and best methods.

Shipping tests are being carried on constantly. Close contacts are being maintained with shipping points and transportation facilities. Loss and damage claims are kept at a minimum by corrections in handling methods as a result of surveys conducted regularly. The railroads and trucking lines are

PROMPT SHIPMENT AT LOWEST PRICES ON ANY PALLET
ORDER FROM 1 CAR to 100 CARS!



No. 1—Standard Double-Faced Non-Reversible Pallet. Slatted deck design. Bottom boards are spaced to permit entry and elevation by either hand-truck or electric fork trucks.

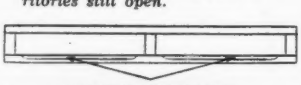
No. 2—Reversible Double-Faced Pallet. Both upper and lower deck boards are spaced to permit entry of pallet trucks.

No. 3—Stevedore, or Cargo Pallet. Non-reversible, double-faced, with over-hanging deck boards to permit use with sling.

What are *your* pallet requirements? Write, wire or phone for prices on our line. We believe we can offer a lower quotation than any other pallet company in the country . . . and *furthermore* make PROMPT SHIPMENT! Ozark Pallets are outstanding in construction and utility. They are everything you demand in a pallet. Contact us *now*.

Representatives Wanted!

Attractive commissions can be earned by our sales agents. Get our proposition. Many good territories still open.



CHAMFER END BOARDS FOR EASY TRUCK ENTRY

OZARK PALLET COMPANY
P. O. BOX 63, BERGMAN, ARK. PHONE L. D.

helping us in our efforts to improve safety of shipments. Research studies now in progress are helping this situation. In some important projects, models and model layouts are necessary. These assist in better visualizing the set-up and avoid expensive errors in the final plan.

LET'S FACE THE PROBLEMS

By R. W. MALLICK
Section Engineer
Headquarters Manufacturing Engineering Department
Westinghouse Electric Corp., Pittsburgh, Pa.

LET'S face the issue squarely. About fifteen years ago, we paid for common labor, usually employed for material handling from $.35 to $.55 per hour. Then we proceeded through the well known evolution of "reforms" for labor. There is little need to discuss the social aspects of this era here, but the effects on our industrial thinking should be thoroughly explored.

Today, among the leading electrical apparatus manufacturers, the hiring rate for the lowest grade of labor is in excess of $1.00 per hour. This amount is augmented by incentives and bonuses. Add to this the "welfare" items which your payrolls carry and you have a rather tidy rate for each hour of "unproductive labor".

From many viewpoints, there is no reason to find fault with this rate of pay. As a matter of fact, our unions tell us it should be higher. Perhaps it should and maybe it could be—justifiably—if we learn to use it effectively. And we can.

Today we have relatively unskilled machine operators earning many times more per hour than the highest skilled mechanics earned only a few years ago and even today. We were able to do this by applying the principle of "transfer of skills" through the use of tools which enable the unskilled operator to "reproduce" many more pieces per hour to the same degree of accuracy that the mechanic could by use of his skill when employing handicraft methods. On the production line, this has paid off in real dividends and "real" wages.

I have made the statement many times that the effective use of labor is a Management responsibility.

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Your work—and materials—move faster and more economically when your equipment rolls on easy-going U. S. Industrial Tires.

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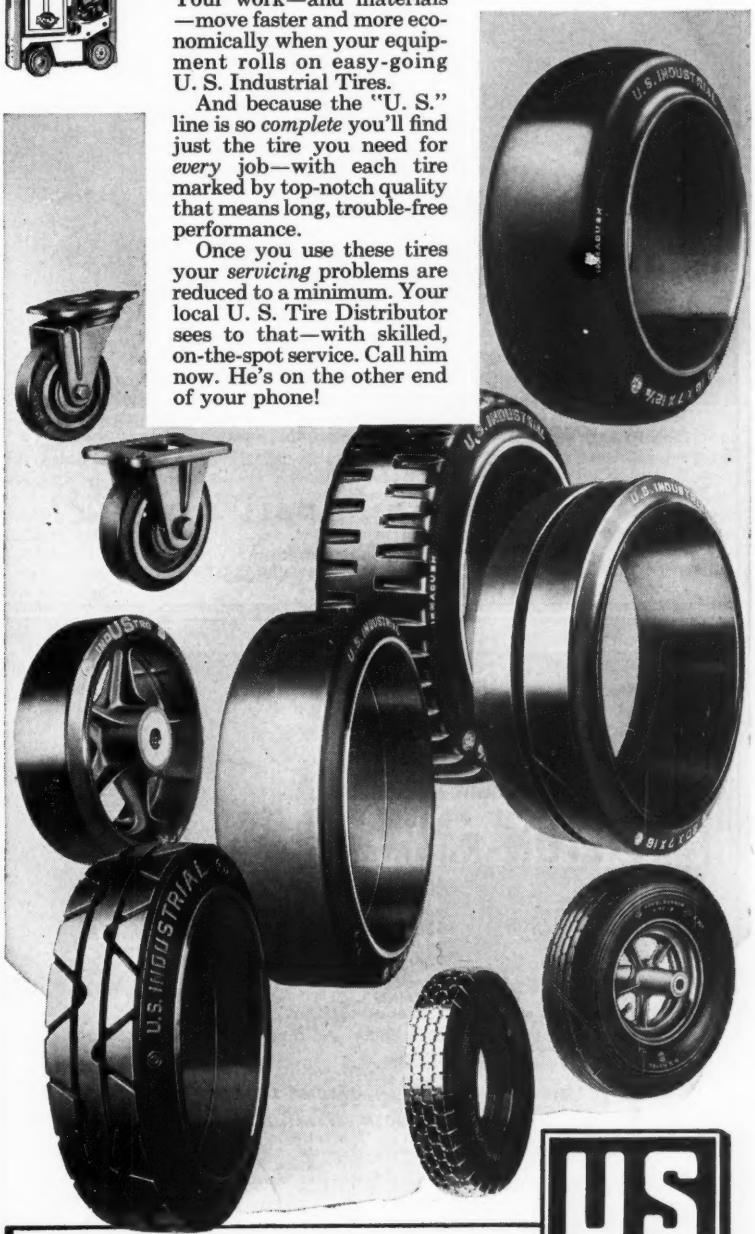

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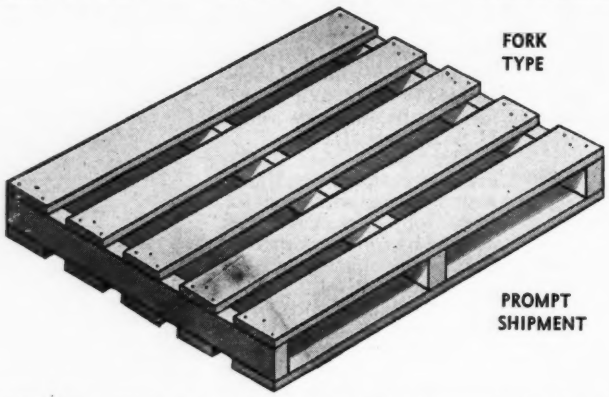
PALLETS

FORK TYPE • HAND LIFT • STEVEDORE



IPCO pallets are sturdy . . . of sound mixed unseasoned hardwoods constructed with cement coated drive-screw nails, hand-driven. The drive-screw nails drive like nails and hold like screws. The Stevedore type pallets are constructed with carriage bolts that have the nuts countersunk. IPCO pallets stand up under the most rigorous service.

Write or telephone for quotations.

IPCO

INDUSTRIAL PALLET CO., INC.
1616 Woolworth Bldg., New York 7, N. Y.
BArclay 7-8446-7

Here is an IMPROVED way to HANDLE MATERIALS and POSITION WORK

LYON-Raymond
Hydraulic
HIGH-LIFT TRUCK

Modern welded tube and formed plate construction, designed for strength, rigidity and safety. Weighs only half as much as an ordinary tiering truck of comparable capacity.

1. LIFTS & TRANSPORTS
Will pick up a skid load as handily as the usual type of lift truck. Easily transports capacity loads and can be steered into any space accommodating its width.

2. SUPPORTS
An adjustable support for overhanging work on drill presses, shears, cut-off machines, punch presses, etc. Serves also as a feed table for many operations. Secure floor lock.

3. LEVELS
Exact leveling for changing dies in presses. Ideal for transporting heavy die sets, fixtures and tools to and from storage bins.

4. POSITIONS
Adaptable to positioning work in lathes, loading and unloading heavy work from other machine tools. Quicker and safer than with a helper and chain hoist.

5. LOADS & UNLOADS
One man can do the work of many in loading and unloading freight. Especially convenient where shipments are delivered to curb or where docks are not available. Hydraulic operation assures ease and safety.

6. TIERS
An easily maneuvered truck, adaptable to tiering. Among other uses it serves as an adjustable work table for machining, assembly and general toolroom work.

Prompt Shipment
Write for Bulletin 240

LYON-Raymond
Corporation
564 Madison St. Greene, N. Y.

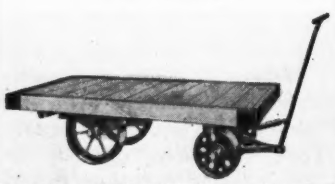
Under ordinary conditions, labor "sells" you eight hours of effort for eight hours' pay. The productive results of that effort depend to a great extent on how much "mechanical advantage" management applies to that effort.

A $1.15 per hour laborer will spend that hour lifting and piling boxes within the limits of his physical capacity, or he will lift and pile many times more boxes if management has provided him with a mechanical assistant to help him pile. *In nearly every ordinary case where mechanical equipment can be used to augment human labor in material handling, the cost rate per hour for the equipment is only a fraction of the cost rate per hour of labor, yet the total work performed is many times more in units of work as compared with using human labor alone.*

Let's take a simple example. Assume that we have 500 cartons of material each weighing 50 pounds that are to be moved to a mezzanine floor. To move them by hand a man must lift, carry, walk up 12 steps, place the material and walk back for the next load. By using two men and a power booster

HEAVY DUTY WAGON TRUCKS

By Lansing



Immediate Delivery $62.50 F.O.B. N.Y.C.

Could not be duplicated at twice this price

Heavy duty platform trucks for all kinds of service. Used for handling metals, hides, grain, rugs, paper, and other heavy materials. Can be immediately converted with racks, stakes, etc., to suit your particular use.

Platform, 79" long by 45" wide, hardwood; heavy frame. Extra heavy rear wheels, wrought spoke; 18" in diam., 3½" face. All Hyatt roller bearing. Steel axle, 1½" sq. 14" forged steel fifth wheel, steel hounds, tongue and handle with heavy steel coil spring. Capacity, 4,000 to 6,000 pounds. Weight, 440 pounds.

METROPOLITAN BUILDERS SUPPLIES CORP.
44 Court Street, Brooklyn 2, N. Y.

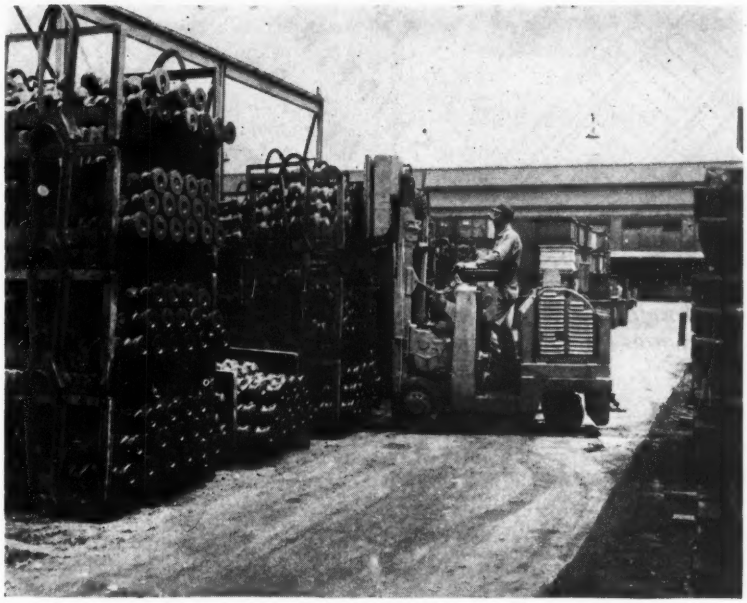
conveyor, the job can be done in several hours' time. One man doing the job alone would work several days. The fatigue factor would be high and efficiency low. By using mechanical assistance the total cost to move the material would be greatly reduced. The machine would do the hardest part of the job for a few cents per hour. Labor would receive a much higher reward for the "real" effort applied to the job.

This simple truth still lacks appreciation on the part of many managements. Too many of our old-line managers have not recognized the fact that there is no more cheap labor today.

In his recent address to Congress, President Truman admonished management to reduce prices. With labor and materials at the highest levels in history, and with prospects of their going higher, there appears to be only one answer. More effective use of these elements. The most fertile field in all industry is in material handling.

Management must soon recognize this fact, and apply more engineering effort to this field.

Racks With Stacking Guides



These pallet-type shop racks, used as standard equipment by International Harvester Co., are of particular interest because of their easy stacking feature. The welded "hairpin" guides permit of positive stacking, and the containers can be handled either by crane or fork truck. Note that the base of the vertical angle iron stacking guide is flared and fits over the pointed top of the container stacked below. If the fork truck operator is off position an inch or two when stacking a load, the guides automatically dowel on the lower ones because of the flared design.—Courtesy, International Harvester Co., Industrial Power Division, Tractor Works.

SAVE MONEY
ON
PALLETS
BUY the BEST—
Buy CHATTANOOGA

BECAUSE

1. Superior Workmanship
2. Selected Hardwoods
3. Drive Screw Nails
4. All Lumber Surfaced on Four Sides
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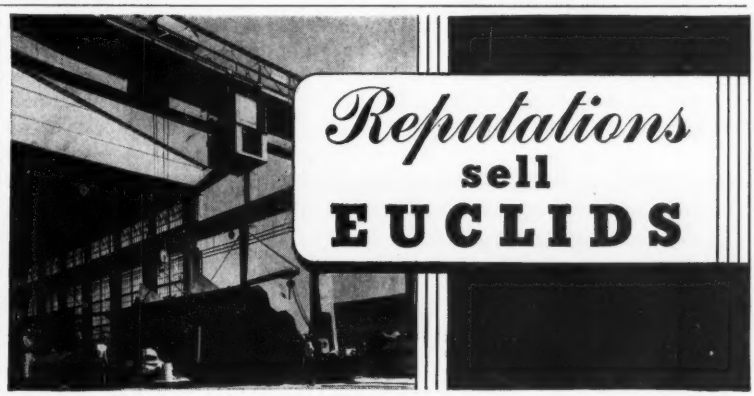
6. When You Buy Our Pallets You Buy a Finished Product at Low Competitive Prices

Chattanooga Fabricating Co. Inc.,
P. O. Box 7026
Chattanooga, Tennessee



Wide acceptance of Euclid Cranes and Hoists is a result of the Euclid Reputation through several decades as designers and builders of equipment that affords maximum service with minimum operational and upkeep costs.

Postwar demands are necessitating fast production schedules which are being met with the aid of Euclid Cranes and Hoists everywhere.

You will find in the Euclid Line a unit or units to meet your specific requirements.

EUCLID CRANES AND HOISTS
Raise Profits

THE EUCLID CRANE & HOIST CO.
1362 CHARDON ROAD • EUCLID, OHIO

WRITE FOR CRANE CATALOG

"Self-unloading" trailers equipped with beds of gravity rollers, and power handling within freight cars make for a speedy loading operation at this Frigidaire plant.

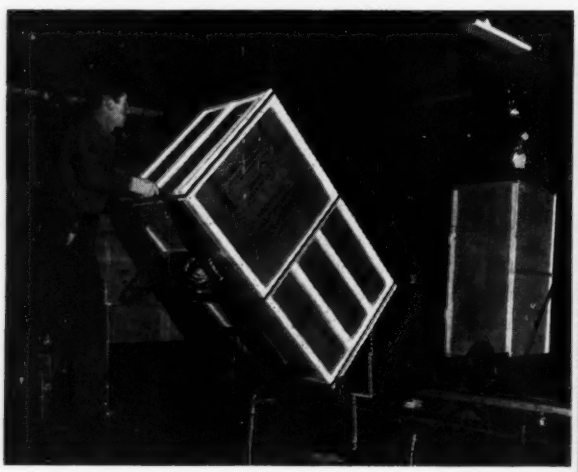
THE accompanying series of photos shows some interesting and efficient handling practices of household refrigerators in connection with freight car loading at the Frigidaire Division, General Motors Corp., Dayton, where several sizes of these products are shipped daily in considerable volume.

Delivery from packing to the freight car loading platform by other means was found inadvisable due mainly to the location of certain fabricating departments and the exceptional length of the loading dock. The plant engineering department decided on movement by special low-slung trailer and tractor for the following reasons: 1. Convenience in loading the trailers from the end of the assembly line. 2. Rapid transfer of the bulky cases in quantities that would be difficult to achieve with any other method through the areas and aisles that must be traveled. 3. Easy removal of the boxed loads from the roller-bed trailers which are practically self-unloading, enabling the tractor operator to make a maximum number of trips without dependence on handlers to remove the loads; and without the need of leaving the trailers with the loads at the cars, which would tend to congest the relatively narrow docks.

The boxed and strapped cabinets are delivered from the assembly conveyor on the type of wooden platform shown in Photo No. 1. It is approximately one foot above floor level. The tractor operator, arriving with the empty trailer from the car loading dock, backs the carrier against the platform. The bed of this trailer consists of gravity rollers spaced on approximately two-inch centers. The inside width of the bed (between channels) is 38 inches, the length 15'4". Note that the two-wheel trailer is mounted on pneumatic tires, attached to the frame between guards, which minimize the effect of shock to the boxed assemblies during travel. A coupler in front and a special "brake" complete the equipment.

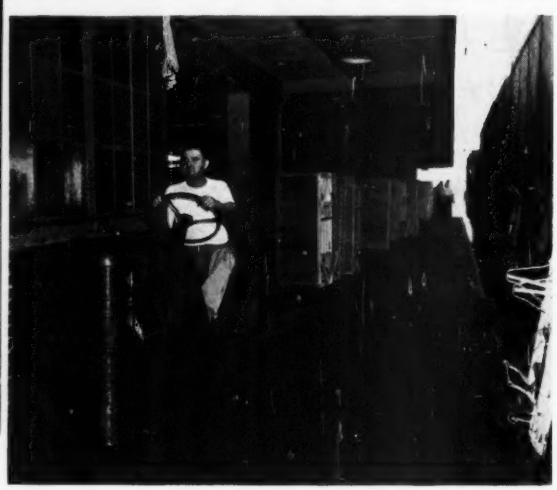
When the carrier has been backed up and uncoupled, the rear or loading end is tilted at a slight angle, bringing it on a level with the platform. The boxed cabinets arriving by conveyor are wheeled across the 25-foot-wide elevated area by use of rubber-tired stevedore trucks and are rolled directly onto the conveyor truck bed as shown. The individual boxes roll readily toward the front since the trailer is tilted in this direction. Four cabinets of average size make up a load. Meantime the tractor operator has hitched on to a full trailer for delivery to the loading dock. Several trailers are constantly being loaded at the platform, thus keeping one or more tractor operators busy.

Since the rear end of the trailer is "open", a precaution must be taken to prevent the cabinets from rolling off the conveyor bed during travel, at the same time avoiding the use of devices that would slow the tractor operator. This is accomplished by means of a lever control at the front of the trailer, which the tractor operator sets before starting his run. When thrown, the lever locks the last eight rollers, thus serving as a "brake" which prevents the cases



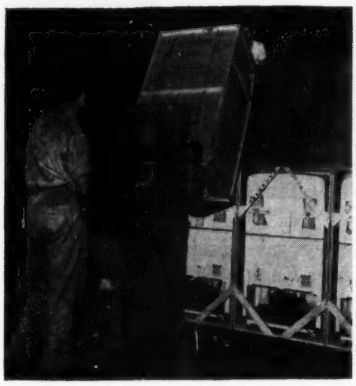
Transferring load from platform to gravity roller bed of special trailer.

Cabinets behind trailer are discharged from slanting bed of rollers.



from sliding off.

The operator stops at the designated car, and the trailer is tilted with a manual control accessible from the driver's seat. At the same time the tractor is moved forward. The inertia of the crated cabinets, plus the inclined section of roller conveyor, causes the crated units to be deposited on the floor as the trailer moves ahead. The cabinets shown immediately to the rear of the trailer in Photo No. 2 have just been unloaded in this manner. From here the individual boxes are wheeled the few feet by two-wheel hand trucks into the box cars. Thus, after a momentary stop, the tractor operator continues on his way toward the loading point, where he drops the empty trailer and picks up a full one.



Compact, light-weight fork truck loads upper tier—speedily, effortlessly.

Photo No. 3 shows the rapid method used in building the second tier within a freight car. For this purpose a light-weight fork truck is used. Depending on the size of the cabinets, those forming the second tier may be loaded either standing vertically or placed on their sides. In this case, the upper layer is placed horizontally. The fork truck operator elevates the units and the operator atop the first tier spots them in the desired position. Thus manual effort is minimized throughout, and a maximum number of cars is loaded daily. The upper decks are braced with ¾-inch steel strapping.

(See another article in this issue for details on loading the heavier and bulkier cabinets, page 32.)

HARDWOOD—STEEL—ALUMINUM

HARDWOOD—STEEL—ALUMINUM

Let Us Supply You

with

THE RIGHT PALLET

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at the *Right* Place — at the *Right* Time

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MAGNESIUM ALLOY DOCKBOARDS

L C L PALLET BOXES

Learn the economy of a rental program for the entire materials handling system and how it can be arranged.

Mill connections in Ohio, Pennsylvania, New York, Virginia, Georgia and Arkansas.

HARDWOOD—STEEL—ALUMINUM

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GUARDIAN BUILDING

CLEVELAND 14, OHIO

ISLAND

(REG. TRADE MARK)

Avoid Jams, Delays & Unnecessary Expense!

Look into the

ISLAND

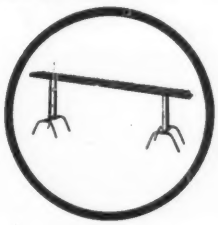
line of

Unitized **SPOT** *Conveying Equipment*

Below are a few of the many outstanding types of equipment ready to help you to safe, speedy, sanitary and efficient conveying.

Portable Light Duty Gravity Conveyor

Light, strong, handy, efficient and extremely free wheeling. Carried in stock in straight and curved sections.



Powerflex Conveyor

Individual synchronized motorized belt conveying units requiring no guides, and capable of conveying up or down grade, around turns, etc.

Unitable

All purpose portable power belt conveyor, work table and straight line production system, with and without side leaves.

ISLAND EQUIPMENT CORP.

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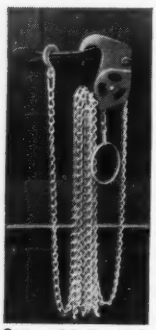
ISLAND

(REG. TRADE MARK)

SAFER—FASTER BETTER way to open balky box car doors!

MONARCH ONE MAN CAR DOOR OPENER



One man can open the most binding, balky box car door with the Monarch Car Door Opener. Get greater safety . . . speed loading and unloading schedules . . . order an ample supply to fill your needs today!

● No strained muscles. No slips or falls. No broken arms, legs or mashed fingers. No fatalities. No time wasted. No "gangs" needed. No time loss.

Write for free descriptive literature.

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Mining Safety Device Co.

Dept. F-3, Bowerston, O.

WHY ENGINEERED DESIGN PALLETS?

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Acquisition of additional facilities now doubles our output of hardwood two-way and four-way pallets.

Deliveries can now be commensurate with your most urgent requirements and at no sacrifice in quality.

ENGINEERED DESIGN will insure your investment in wooden pallet equipment by adapting only those designs basically sound for fabrication in wood.

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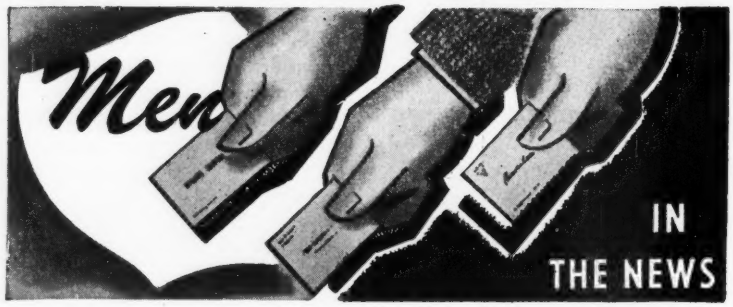


C. S. TRAER, president of Acme Steel Company, announces the following organizational changes effective January 1:

J. E. Ott

C. J. Sharp was elected to the newly created office of executive vice-president. He was formerly vice-president, director of sales.

The sales administration of the company's entire line is to be divided into two principal groups, consumer products and producer products. Consumer products are to cover such items as steel strapping, stitching wire, including machines for their application, and are used by the trade as sold. John Ekern Ott is named general manager of consumer products.

Producer products are to cover such items as hot rolled, cold rolled strip steel, special strip steel products, etc. Allen B. Wilson is named general manager of producer products.

Guy T. Avery, formerly works manager, Riverdale Plant, is elected to the newly created office of vice president and manager of production, all plants. B. Richards was named as assistant to vice president and manager of production.

W. C. Fork was appointed works manager, Riverdale Plant, to succeed Avery. F. R. Hyde was named superintendent of the Archer plant.

T. R. KELLEY has joined the Retail Division of The Buda Company as a Field Engineer and will cover the territory embracing the Northeastern section of the United States and Eastern Canada.

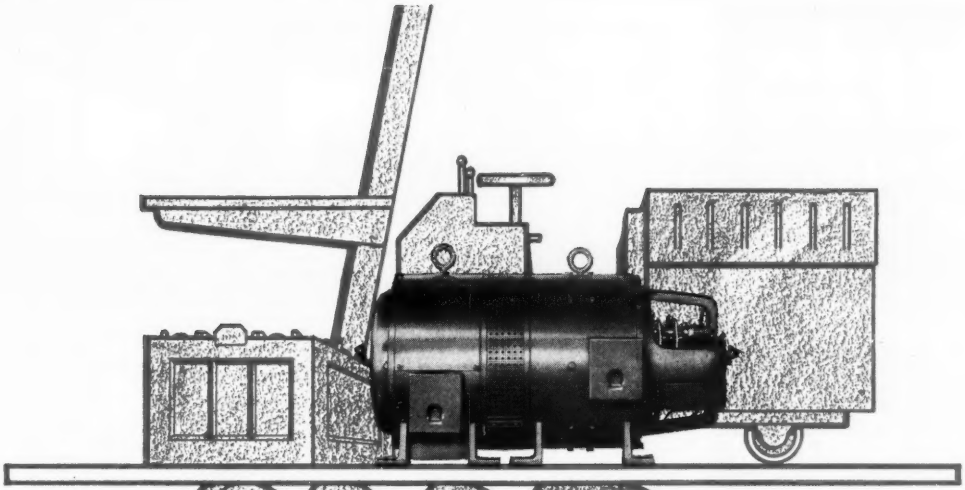
From 1935 to 1941 he was Diesel Field Engineer for Waukesha Motor Company. From 1941 to 1946 Kelley was Design Engineer of Superior Engine Division of National Supply Company, Springfield, Ohio, in charge of high speed and oil field engine design and development. During the war he spent considerable time on the development of engines for LST, PC, FP, LCT, LCI and torpedo retriever boats. He will make his headquarters at the Buda Engine & Equipment Company, 1315 Boylston Street, Boston, Mass.

ALLEN A. WARD has been elected treasurer of the General Box Company. He was formerly associated for many years with Arthur Young, and Company, Public Accountants, came with General Box Company January 1, 1946, as controller. C. Claude Watkins was recently elected to the Board of Directors. As vice-president in charge of purchases, he was formerly active in the management of the company's Louisville branch.

Allen A. Ward

PHILIP C. TALBOT has been appointed manager of the new Philadelphia branch office of The Reeves Pulley Company. He will be assisted by William A. McCosh. Both men are graduate engineers and have been directly connected with the engineering and sale of Reeves Equipment for many years. It is expected that the new office will result in better service.

P. C. Talbot



THEY GO TOGETHER FOR *Proved Performance*

BATTERY-POWERED industrial trucks have established a record of outstanding performance in every industry. BUT inadequate or unsuitable charging facilities will inevitably *shorten* battery life, increase maintenance costs and make impossible the maximum usage of the trucks.

In 1910, The Electric Products Company introduced the first AUTOMATIC Battery Charger. Since then, paralleling the growth of materials handling equipment, the development of E.P. Chargers has progressed until, today, they most efficiently and advantageously combine:

- **Completely Automatic Operation** . . . eliminates the need for specially trained personnel in continuous attendance at Charging Stations.
- **Modified Constant-Voltage Method of Charging** . . . assures that batteries are properly charged. Generator voltage remains constant within extremely close limits at all loads and temperatures.
- **A design built specifically for the individual application.** While the parts that go into the assembly of an E.P. Charger are standardized and every one proved by years of field service, every E.P. Charger is designed, built, adjusted and tested to match the needs of the specific batteries it is to service.

The Battery Charger is not just another piece of equipment required for the Materials Handling System. It's the "core" of the whole operation. It controls the operating continuity of a dollar investment many times greater than itself. Modern plant production . . . and profits . . . depend upon the constant availability of battery-powered trucks. But if the Battery Charger is not capable of doing its job at all times . . . with only minimum maintenance . . . costly production delays will unavoidably occur. Consider too that the life of a properly designed Battery Charger will be many times that of the batteries it serves.

ASK FOR BULLETINS 203, 205 and 206

EP -X-28

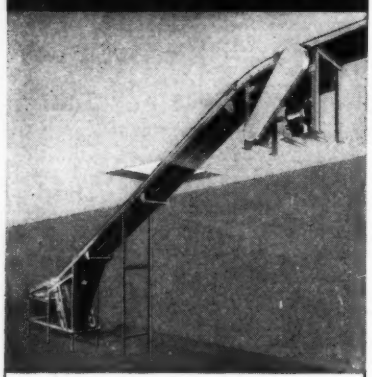
THE ELECTRIC PRODUCTS COMPANY

1730 CLARKSTONE ROAD CLEVELAND 12, OHIO

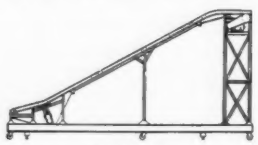
Speed THE HANDLING OF MATERIALS from FLOOR-TO-FLOOR with this

STREAMLINER

30° INCLINED BELT CONVEYOR



Reversible—this "Streamliner" Belt Conveyor operates either up or down at constant speed of 45 feet per minute. Its rollers can be "SET HIGH," for oversize packages, or "SET LOW" to provide a protective guard rail on both sides of the durable rough top rubber belt. Unit is available in standard sizes up to 30" wide . . . has manual take-up for belt slack . . . may be equipped with casters for portability . . . or can be supported from one floor. Write for full information.



PORTABLE

SUPPORTED FROM ONE FLOOR

HARRY J. FERGUSON CO.

WHEEL • PORTABLE BELT • BELT AND ROLLER GRAVITY CONVEYORS

121 WEST AVE., JENKINTOWN, PENNA.

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

HAND PALLET TRUCK

NP14—Total enclosure of working parts of the newly designed Lyon-Raymond 2000-pound capacity hand pallet truck, recently announced, is designed to protect the mechanism as well as give a streamlined appearence to the equipment.

The use of high strength alloy sheet steel formed into box sections for the frame, and aluminum alloy for wheels and other non-structural parts, the manufacturer states, insures a minimum of weight. Two men, it is claimed, can load this truck from ground level into a highway truck.

AUTO-STENCIL CUTTER

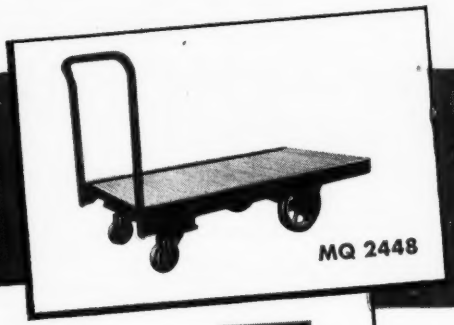
NP15—An automatically fed circular stencil-cutting machine is being offered by Diagraph-Bradley Stencil Machine Corporation. Three sizes of the automatic feed circular stencil-cutting machines are available. Stencil letters 1-¾ inches, 1-½ inches, and 1-¼ inches high, respectively, can be cut on these three machines. All three may be converted to straight-line stencil cutting, the manufacturer states. Three lines can be cut on Models G and H; and two lines on the Jumbo. The third line can be cut on the Jumbo by hand feeding the machine. The equipment is applicable to equipment in barrels, drums, or other cylindrical containers.

DRUM ADAPTOR

NP16—Merrill Brothers, forging manufacturers, announces a "combination" of two tools, one a steel drum cutter and the other a lifting clamp. These tools, the manufacturer states, permit the conversion of steel barrels or kegs into convenient form for storing and conveying small parts or loose material. With one tool the top of any steel barrel can be converted into a container. By means of the other member of "the combination", the clamp for lifting plates, angles, barrels, kegs, etc., these cut-away top barrels can be lifted or conveyed where wanted.

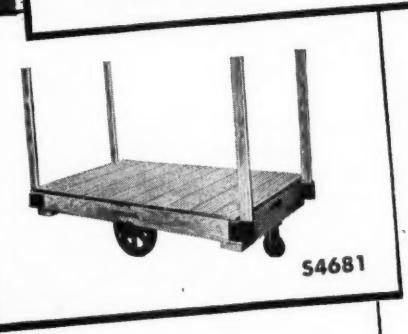
POWER JACKLIFT

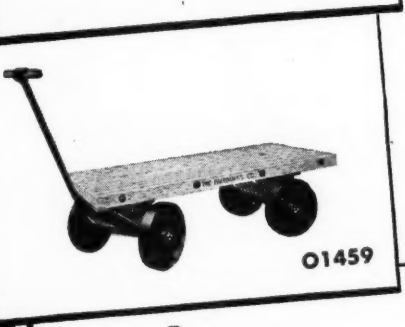
NP17—Vertical handle operation and an electric brake are featured in Lewis-Shepard's new Power Jacklift, built in both platform and pallet models. The Power Jacklift is an electrically operated hand lift truck with complete electric button operation, located in the handle head. Every operation of this truck can be performed with the handle vertical. The positive electric brake will, when the handle is released, stop the truck. In the vertical position or when lowered, the handle has a steering arc of 200°, designed for accurate loading,

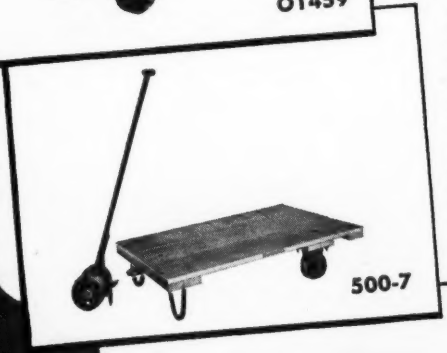


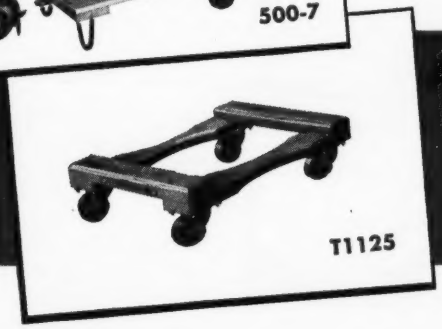
SPECIALLY DESIGNED TRUCKS? STANDARD TRUCKS?

get the advantages of both with fairbanks









Solidly based on years of on-the-job study and experience in all types of load-handling assignments, the standard line of Fairbanks Hand and Platform Trucks includes over 90 basic designs — developed to put the maximum possible speed and ease into 90 specific types of jobs.

With this unusually large variety to choose from, you can pick a Fairbanks Truck that will give you the job-design advantages you want, plus the savings in time and money that always go with standard equipment. For complete information about the entire Fairbanks line, or details about any specific truck, write The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; 520 Atlantic Ave., Boston 10, Mass.; 15 Ferry St., Pittsburgh 22, Pa.; 748 M&M Bldg., Houston 2, Texas.

MQ 2448. Commander Steel Frame Platform Truck. Hardwood platforms securely bolted between heavy angle irons; ends and sides armored to assure long life. Heavy duty, double ball bearing, semi-steel casters provide easy rolling and steering. Sizes 24″ x 48″ to 36″ x 72″.

S2742A. Commander Steel Frame Platform Truck. Identical in general construction features with the Q type truck, but is Tilting or Center Balance Type for quick turning in small space, around sharp corners, etc. Turns in its own length, pushes from either end. Sizes 27″ x 42″ to 30″ x 60″.

S4681. Factory Truck. Hardwood construction throughout, ball bearing swivel type casters. Balances on center wheels. A lightweight, durable, easy-to-operate truck that handles light, bulky loads with unusual facility. Wooden stakes are removable. Sizes 24″ x 48″ to 36″ x 60″.

O1459. Heavy Duty Wagon Truck. Capacity four tons. Extra strong construction throughout, including two 3″ x 1″ solid iron cross sills. Wheels are broad faced for easier starting and rolling under full load. Sizes 36″ x 72″.

500-7. Lift Jack Platform Truck. Lifts and rolls easily with heavy loads. Ideal for small spaces, eliminates many handling processes. Powerful jack operates by merely pulling handle down. To remove jack, handle lifts up, jack rolls out. Size 30″ x 48″.

T1125. A rugged wooden frame dolly with side bars shaped to conform to the hand. Four ball bearing swivel casters. For quick, easy handling of refrigerators, furniture, boxes, long cases.

American industry rolls on

fairbanks trucks

4996

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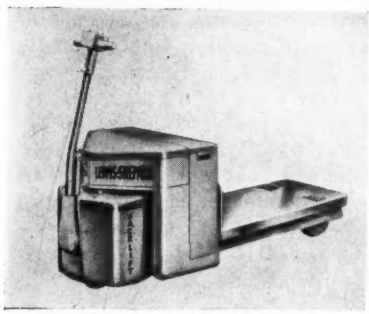
lifting, travel, lowering and spotting of loads.

Both models are driven by a re-



placeable Electric Master Drive Unit. The gear drive and all wheels are mounted on ball bearings and totally enclosed and packed in grease. The trucks are available in several lengths, the platform truck in both wide and narrow models.

PORTABLE REGISTER

NP18—Moore Business Forms announces the lightweight Moore Portable Register. An automatic

file drawer is said to be an exclusive feature. Rollers on each side of the file drawer with an improved spring and drawer stop provide positive operation. For lightness, all parts, except those requiring extra strength are made of aluminum. Four models are available.

THREE WHEELED HAND TRUCK

NP19—A 3rd-wheel attachment for two-wheeled hand trucks, manufactured by the Melooz Mfg. Company, is said to not only take the load strain off the operator, but also to double the load carrying capacity of any hand truck. Free steering, the attachment is readily fitted to any new or old two-wheel hand truck. Made in two sizes, the Universal Tilt Truck Attachment rolls the load on three wheels instead of two. It is said to be instantly adjustable to any load balance, and in full powered position makes a three-wheel platform of the truck. The maximum load which can be carried on a truck using this attachment, the manufacturer states, is limited only by the load capacity of the truck itself.

INSULATED TROLLEY SYSTEM

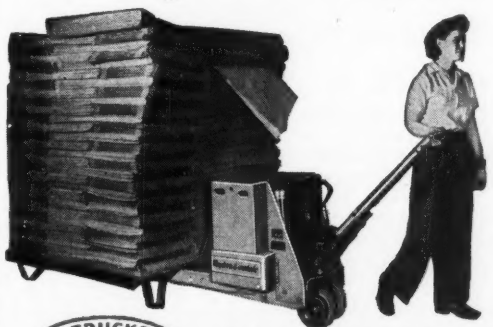
NP20—The fully insulated Trac-Troly, announced by the Benbow Mfg. Company, is claimed to be suitable for virtually every type of electrically operated mobile equipment and it is said to prevent accidents caused by exposed conductors. This system meets national and state safety code requirements which prohibit unguarded conductors, according to the release. The

In 1902

45 Years Ago,
chain drives were modern
. . . but not in your LIFT TRUCK today . . .

If you judge a lift truck by 1902 standards, a chain drive for propulsion or horizontal travel might suffice. Strangely enough, some lift trucks are still made with old-fashioned chain drives. But 1902 standards just won't do for 1947!

THE MOTORIZED
HydroLectric



We equip the HYDROLectric with a fully enclosed gear drive. As a result, the powerful, completely modern HYDROLectric is free from the excessive "drag", noisy operation, breakage and other difficulties peculiar to chain drive mechanisms.

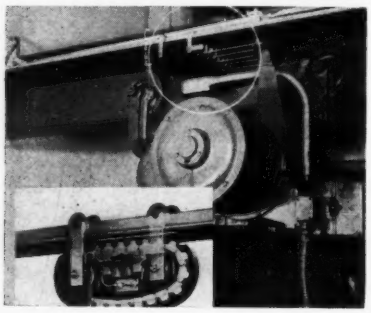
Superior advantages of the HYDROLectric's enclosed gear drive are apparent on every operation — and particularly where abrasive materials easily attack and damage an exposed chain drive. Downtime is less, maintenance cost decidedly lower.

Engineered and patented by W. Stuebing

LIFT TRUCKS INC. W.W.W. STUEBING CINCINNATI

LIFT TRUCKS, INC.
Walter Stuebing, President
2425 Spring Grove Ave. Cincinnati 14, Ohio

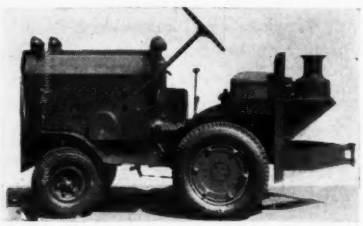
system consists of a copper conductor in standard 10-foot lengths encased in a slotted Neoprene rack supported by a rigid backing; and



individual traveling collectors which employ an endless chain, like a tractor tread, to effect positive five-tooth multiple contact at all times.

INDUSTRIAL TRACTOR

NP21—The A14V SHOP MULE tractor is announced by the W. F. Hebard & Company. It has a 2000-pound line pull vertical capstan winch and a special trailer hitch, and weighs approximately 3000 pounds, is 42″ wide, 80″ long (less coupler or trailer hitch), and is 59″ high overall. The overall length including capstan is 95½″; including trailer hitch it is 101″. Power is furnished by an International 4-cylinder U4 engine, 30.5 brake



horsepower at 1650 RPM with power take-off for the vertical capstan. The maximum drawbar effort is 2400 lbs. The tractor can be mounted with cab, snow plow, or rotary sweeper broom.

MECHANICAL COUNTERS

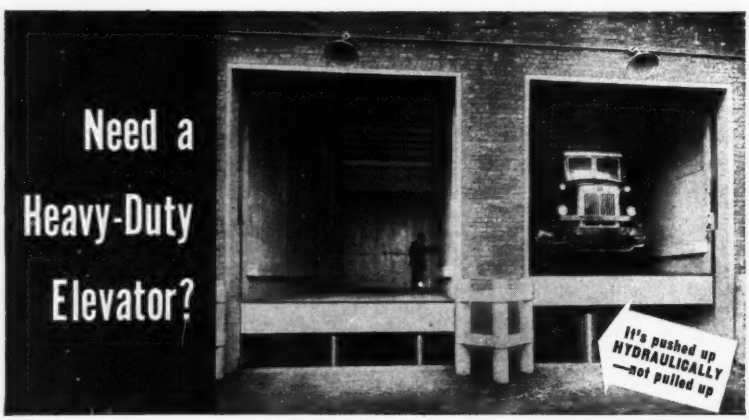
NP22—The Durant Manufacturing Company announces a new series of double deck rotary and stroke counters, made in both conventional and predetermined types, designed as the "N" Series. These models are designed to fulfill the requirements of the ever-increasing speeds of modern production machinery, as well as future requirements of machines not yet off the drawing boards. The design is said to embody several refinements for better appearance, higher speeds, and simplicity in construction. The case and front and back covers are of aluminum for light weight.

TOTE PAN TRUCK

NP23—A department truck, announced by Easy-Tote Products, Inc., is designed to reduce manual effort in the handling of tote pans to a minimum, as there is no heavy lifting. This is accomplished by utilizing a crank, hook, rigid handle and tilting, low base plate. As loaded tote pans no longer have to be dragged over floors, elimination of floor damage and wearing out of tote pans are two of the savings stressed by the company. The flat, low base plate also accommodates containers (other than tote pans). The truck will not only load and unload in a minimum of floor space, but also under work benches.

The loaded truck is supported by

two side wheels and a full swiveling caster. The loads are carried equally by these three wheels. Uneven floors and small obstacles do not hinder the rolling of these loaded trucks, it is claimed. The base plate of the "Easy-Tote" is a 3/16″ steel plate 16″ × 22″ that is adequate to accommodate tote pans of all standard sizes. This base plate is only two inches from the floor.



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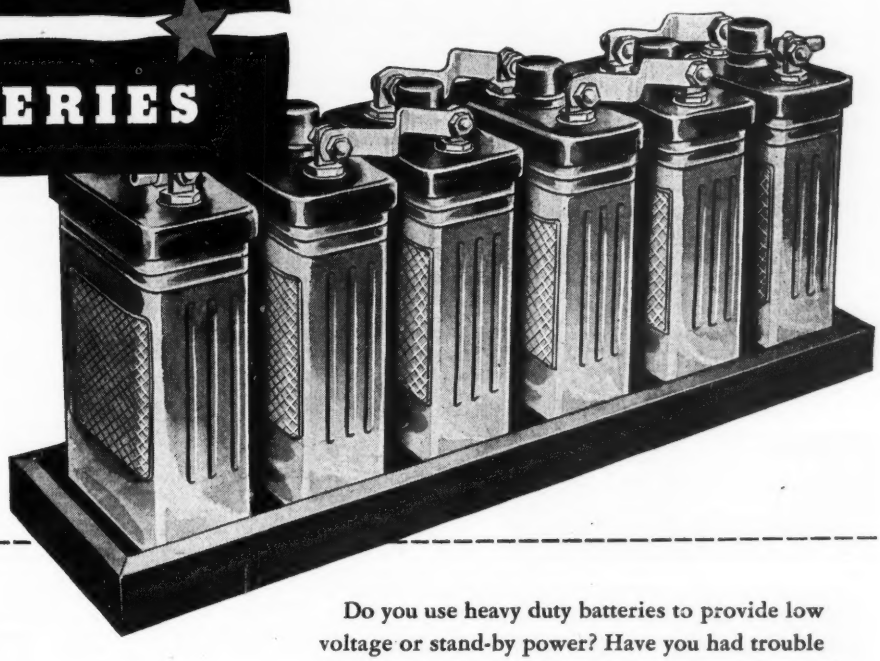

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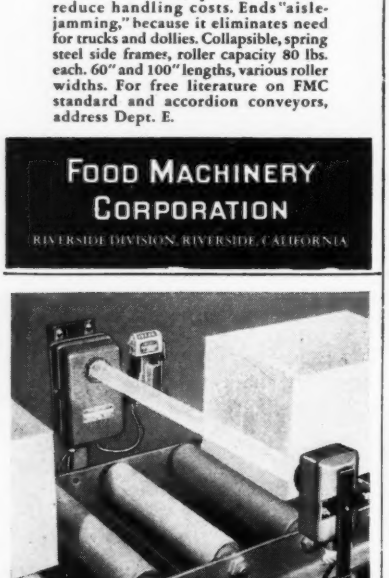

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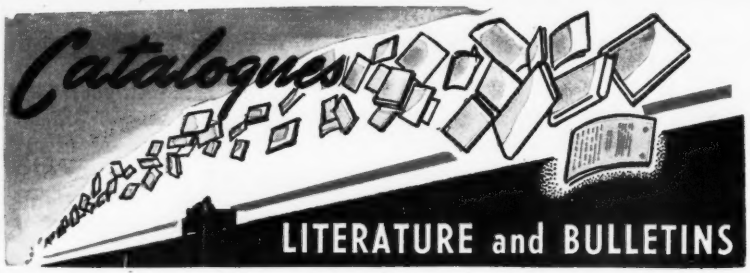

The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

286—Sealed Pin Rubber Flight Conveyors . . . Hapman Conveyors Incorporated offers a six-page illustrated folder showing applications of its flight conveyors for handling metallic chips, dust and sludge. Included are layout drawings of a chip removal system in an automotive plant.

287—Motorized Hand Platform Lift Truck . . . A six-page booklet listing engineering data, drawings and specifications of its motorized lift truck has been prepared for distribution by Lift Trucks, Inc. The folder is richly illustrated with photographs of several different models shown in operation in various types of plants.

288—Power Belt Conveyor . . . A 32-page catalogue published by Rapids-Standard contains descriptions, photographs, and specifications of the company's entire line of power belt conveyors. Detail drawings and close-up photographs of the equipment in use and complete specification tables accompany each model listed. A feature is an illustrated index of the six models listed.

289—Stair Elevator . . . Specifications, construction details, and installation information describing stair elevators are contained in a pamphlet prepared by the General Lift Corp. A complete description of the system and a list of applications for the unit are included.

290—Turret Truck . . . How wholesale grocery handling costs are reduced by 17 per cent is the subject of a four-page folder describing the Salsbury Turret Tractor line. Photographs show application of tractors for order filling in a large grocery warehouse. Drawings and specifications are given.

291—High Lift Fork Truck . . . A profusely illustrated 16-page booklet by the Hyster Company shows numerous applications of its heavy duty, high-lift fork truck. Sketches highlight special mechanical features of the equipment; drawings and tables give complete construction specifications and operational information. A question and answer section further describes the truck and its performance.

292—Motorized Hand Lift Truck . . . Engineering data, specification tables and drawings in an eight-page bulletin describe all pertinent details and performance factors of the platform and pallet model motorized hand lift trucks manufactured by Lewis-Shepard Products, Inc. Diagrams illustrate action of finger-tip control mechanism. The bulletin has been made recently available for distribution.

293—Hydraulic Lift Gate . . . How delivery truck loading and unloading is facilitated is told in an interesting four-page folder describing the Anthony Hydraulic Lift Gate. The gate lowers or raises loads from and to the truck bed. Upwards of 25 action pictures show the handling of a variety of products. A schematic drawing illustrates the operating principle of the mechanism.

294—Merchandise Loader . . . Progressively illustrated to show how its mechanized merchandise loader works is a four-page pamphlet offered by the Equipment Engineering Company. This is a conveyor feeder designed to eliminate extra handling. Mechanical details of the loader are carefully described in captions accompanying the illustrations.

295—Bridge Ramps . . . Safety features and construction details of its heavy-duty power truck bridge ramps and light-weight hand truck ramps are fully described in a four-page folder offered by the Pallet Engineering Company. Drawings give bridge ramp requirements for various types of loading and unloading operations, together with specifications.

296—Hydraulic Floor Cranes . . . The Ruger Equipment Co., Inc., offers a pamphlet on its line of hydraulic floor cranes. Action photos and illustrations show the boom in various positions according to different job requirements. A table gives full operating details.

297—Open Mesh Wire Cloth Conveyor Belts . . . The Cambridge Wire Cloth Company illustrates various applications of its wire cloth conveyor belts in a four-page folder. Described are various applications in different industries. Included is a check list of applications by industry, also photographs of various wire meshes.

298—Industrial Consultants . . . An illustrated 28-page booklet lists the management consultant services offered by The Pioneer Engineering and Manufacturing Company. Plant layout, material handling, and allied management matters are discussed.

299—Tractor . . . Simplicity and maneuverability of the Schwitzer-Cummins Company tractor, called Load Dispatcher, are emphasized in a six-page folder. It is made in hydraulic lift and platform types, and powered by a single-cylinder air-cooled engine of 2 H.P. rated capacity. Three models are available.

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with 10 to 15 years' mechanical and electrical experience designing and manufacturing overhead Cranes and Hoists. Must be able to SELL. Excellent salary and future prospects with long-established Eastern Distributor-Contractor materials handling machinery. Will pay travel expenses for interview. Write fully. Box 3247, FLOW.

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Have Large Sales Organization, Warehousing Facilities, and Maintenance Department. Box 7146, FLOW.

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To sell complete line of materials handling equipment consisting of casters, hand trucks, gravity and power conveyor, skids and pallets, hoists, etc., for newly established office in Syracuse. Representative selected must be well acquainted with local industries, have good previous sales record, and be able to run a branch office. Box 3747, Flow.

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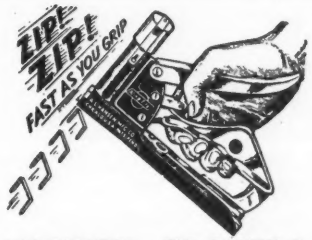

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(Continued from page 45)

above each other on ceramic pins), she gives the table a slight turn. This moves the full container away and brings an empty one within her reach. The operator on the other side of the table removes the loaded saggers and places them on the kiln platform alongside of him. He also puts the empty containers on the table. It is not hard to see that the revolving table is both the shortest distance between the two operations, as well as the easiest method.

In the Mold Shop

In the mold shop the visitor's attention is held by a circular table whose circumference measures approximately 325 feet. This enormous revolving table, about six feet wide, has within recent months supplanted the stationary work tables in this department. Like the automatic forming machines, it also represents a clean break with tradition—another of Lew Reese's original ideas. "It is designed to bring the work to the man instead of having the man go after the work," he said.

Much that Lew Reese says about his own ideas is understatement, and this is one example. While the revolving table brings the work to the man, it is actually a startling innovation in the mold making craft. This department is one of the most critical in any ceramic plant. It is a craft requiring expert skill, because the molds determine the correct sizes and shapes and they must fit into an automatic machine perfectly. The ware made in molds must also have the correct degree of shrinkage when fired. Such exacting requirements meant a long training period for mold makers—traditionally—who had to be competent in performing every step in the long-drawn operation.

This circular table—a segment is shown in one of the photos—changed all that. At least it has at Scio. Reese broke down the complete operation into separate steps, then designed the table to fit his plan. The plan is to have each of several men do only one part of the operation. Result: a new man can learn his specialized requirements in two or three hours and it is no longer necessary to train an all-around expert over a period of years. A few key men are sufficient. The 14 mold makers are stationed along the inside arc of the table, where the dies or blocks in cases are arranged. The table is operated by a variable-speed motor, and the speed can be changed from 30 to 50 minutes per revolution. It is, of course, set slower for small pieces, faster for large ones. As stated earlier, no one in this plant is resting on the laurels of yesterday's accomplishments.

The plaster of Paris is drawn from an overhead storage bin, previously mentioned. The 160-pound batches are mixed in a bucket standing on a roller conveyor bed, one of whose sections is a weighing scale platform. (For the dry powder an automatic batch scale is used.) The finished batch is lifted by means of a ½-ton electric chain hoist running on an overhead monorail installed in line with the inner arc of the table. The suspended bucket can be easily poured and manipulated as the dies travel slowly by on the revolving table. No operators lose time going after materials. The completed molds are transferred from the inside to the outside arc of the table, and thus travel to finishing. They are later moved on rubber-tired 4-wheel trucks to the storage bins for drying.

A mold will last between 350 and 400 fillings. It is characteristic of this plant that they are replaced on the main forming machine without stopping the line. When the molds are needed, they are placed on a short rubberized belt line traveling through the drying bin area. This carries the molds to another belt line, about 150 feet long, which delivers them to the point of use. Both belts are 10 inches wide. The new molds are dropped into the trays on the traveling conveyor shelves. The old molds have previously been taken out at the opposite end of the line and routed via another conveyor to the dump.

A Big Packing Job

The millions of pieces of pottery coming off the lines in a continu-

ous stream naturally entail a big job of carton preparation. This operation is performed in a building adjacent to the one where the packing is done. The skid loads of knock-down cartons, separators and inserts are spotted by hydraulic hand lift truck alongside a battery of three wire stitchers which stitch the bottoms of the corrugated containers. The stitcher operators place the set-up cartons on an adjacent table, where other operators add all necessary fillers, liners, and separators.

This table is located at the head end of three radial gravity roller lines converging on a runway about 150 feet long. The prepared cartons are deposited on the conveyor sections and are then pushed along the smooth-topped runway as more are added at the other end. The cartons are taken off the discharge point and placed into stockpiles according to sizes. Tens of thousands of corrugated shipping containers are thus prepared weekly to assure a smooth-running packing and shipping operation. Incidentally, the packers are thus enabled to concentrate exclusively on packing.

Car loading, which involves many small lots of different kinds of ware, is done by use of flat trucks. Another point has a bearing on this part of the operation. During a certain period of its development the plant grew fast and new kilns were added. In some instances packing departments were installed to serve immediate needs, or wartime shortages of materials prevented the development of a centralized shipping operation. Plans for a unified shipping department were drawn up some time ago, and it is expected that they will soon be realized.

This necessarily condensed account gives you a fair inkling of why the Scio-Ohio Pottery Company and this means L. P. Reese in particular—is commonly credited with having advanced the pottery industry by decades. Some say by as much as 100 years. It makes clear how the ware board—symbol of old-fashioned handling and small-batch production—is being replaced by the mass production methods of mechanized handling. Consider the significance of the 12-line automatic forming machine and its conveyor system. It is operated by three men. At one time 36 potters were making this pottery on manual jiggers, but their combined production was only part of the output of the machine. Wherever mechanical handling devices replaced operators, they were without loss of time given new jobs waiting for them in the rapidly expanding business.

You can't produce an inexpensive line of anything when as much as 40 per cent of the final cost of the commodity may be accounted for by excess handling. Reese knew this years ago but had to wait to prove his point in his own plant. His idea has paid off handsomely, as evidenced by the size of the recent Christmas bonus.

Yes, the kilns at Scio are kept going at capacity!

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See the announcements on pages 9 and 19 on the FLOW Cost Analysis Contest. $1,500 in prizes are offered for the winning papers on cost reductions effected with modern handling methods.

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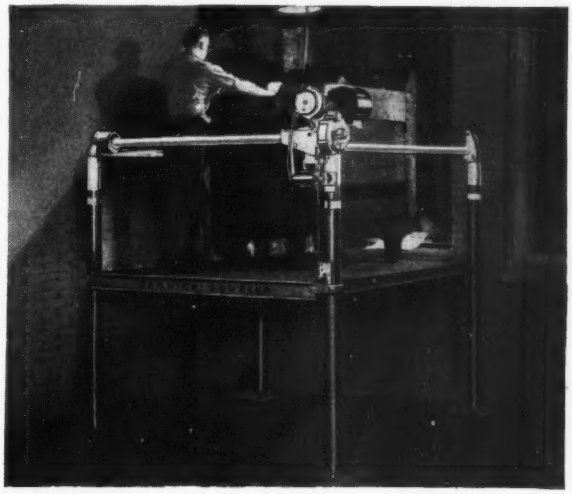

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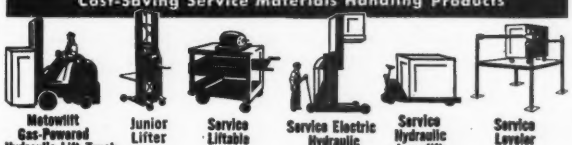

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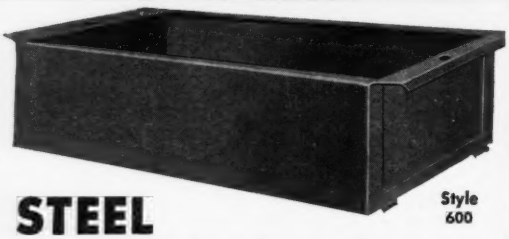

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ON THE PALLET . . .

(Continued from page 38)

lem," said Thulin. "But it offers enormous opportunities for improvement. For example, a 50-ton carload of merchandise takes an average of 50 man-hours to unload and stow by hand methods, whereas one operator with a high-lift fork truck can now unload the same shipment in one or two hours if it is properly loaded on pallets, and store the merchandise four times higher than possible by hand methods."

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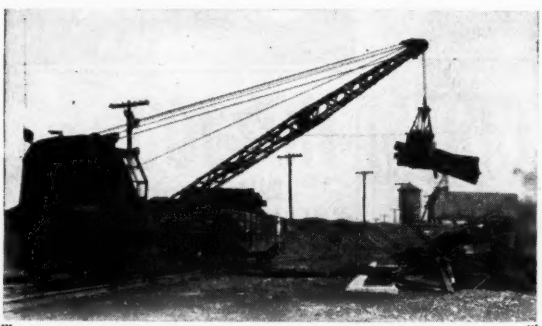
"THE Industrial South" will be the theme of the second Southern Machinery and Metals Exposition to be held in the Atlanta Municipal Auditorium, April 14 to 17. The Industrial Forum, part of the program, will stress the ready markets that lie in this section of the country.

The exposition will aid southern plants, manufacturing concerns, and processing companies which are modernizing their operations or planning expansion programs or new installations. It is expected that more than 200 companies will exhibit their products when the event opens.

The products to be exhibited will range from the ordinary screw driver, wood and metal cutting machinery, to the latest developments in induction and dialectric equipment. Material handling equipment, ranging from conveyors to electric fork trucks will be an outstanding addition to this year's show.



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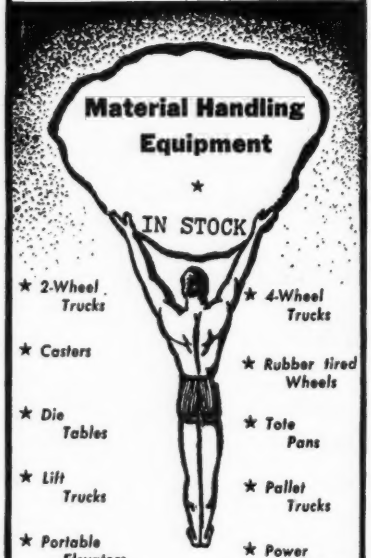

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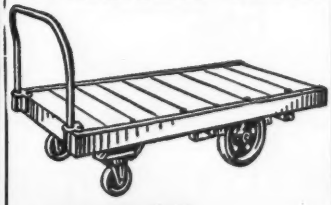

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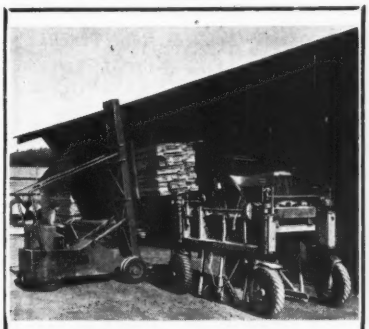

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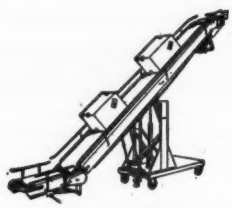

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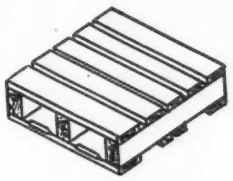

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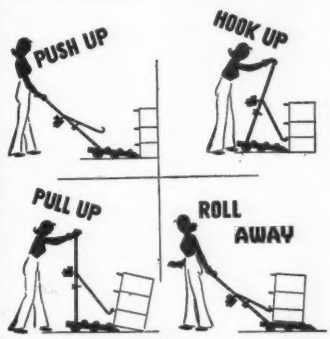

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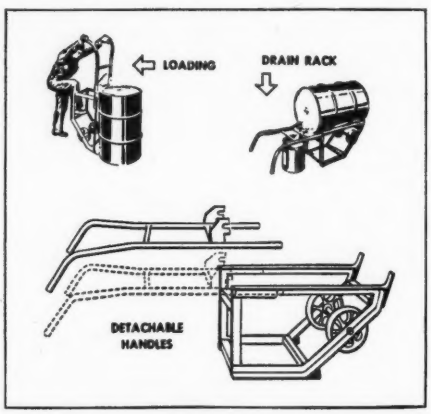

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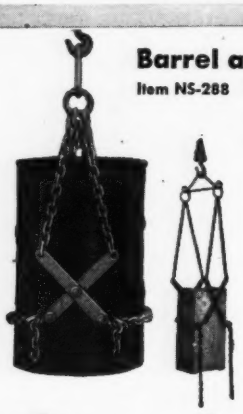

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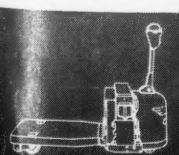
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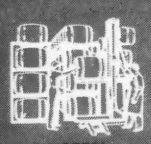
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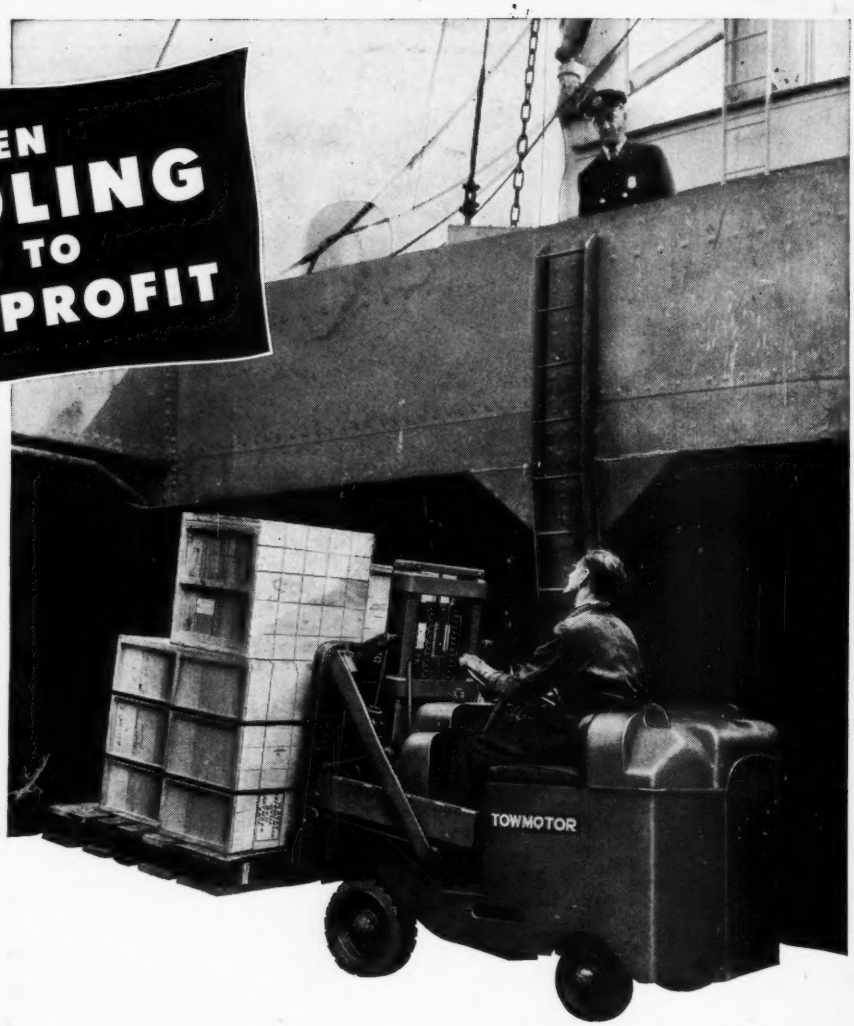

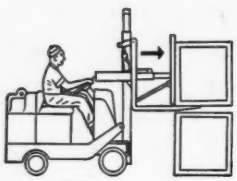

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